



1012712

5HR-13

MAY 22 1989

Richard Clute
Environmental Affairs Coordinator
WCI Freezer Division
701 33rd Avenue North
St. Cloud, Minnesota 56303

Re: WCI Freezer Division
MND 092 304 856

Dear Mr. Clute:

The United States Environmental Protection Agency (U.S. EPA) has reviewed the "Proposed Sampling Work Plan", dated May 3, 1989, and concurs (conditionally) with your scheme for sampling. The following items are important from this Agency's perspective in order to ensure that quality results are achievable toward our mutual effort of environmentally assessing the condition of soil and groundwater at your facility.

1. Further clarification and specification is needed concerning certain details of the proposed plan. First, it is not clear whether PACE Laboratories will filter water samples in the field such that resulting analyses will characterize the dissolved metals content of groundwater. While U.S. EPA and the Minnesota Pollution Control Agency (MPCA) can prepare for conducting this step in the event that PACE doesn't, comparison of data would be most meaningful if split samples are derived through a consistent collection history, and are subjected to a single filtration step conducted in the field before preservation.
- Second, there were no plans offered regarding decontamination of the sampling bailer. U.S. EPA has its own guidelines and policies for decontamination and use of bailers which should be adhered to. PACE Laboratories and the U.S. EPA should agree on all aspects pertaining to bailer utilization before well sampling is initiated.
2. The U.S. EPA intends to acquire additional soil samples, representative of further depth increments beyond those proposed by PACE and WCI, during the sampling visit. We do not plan to drill additional boreholes beyond the number proposed by WCI. However, the total inventory of samples intended for collection by U.S. EPA would be somewhat greater. In the empty container storage area, U.S. EPA will analyze five VOA samples from each of two boreholes. In the Closed Holding Pond, U.S. *next lane* EPA will analyze five VOA samples and five samples for routine

analytical services (RAS) metals from each of two boreholes. In the hole designated as background, five sampling intervals will be analyzed for both VOA and RAS metals

Included in the above, U.S. EPA will obtain a split of every sample taken by WCI. The procedure for taking additional samples will be consistent with procedures used by WCI, and should not inconvenience field personnel to any great degree. It should also be mentioned here that both soil borings, representative of the closed lagoon location, should be taken from the old "lagoon inlet" areas.

3. WCI's written proposal should be modified to address the following:

WCI must present to representatives of both the U.S. EPA and the MPCA viable plans for decontamination of bailers, collection buckets and sample containers. The intended sample procedures for groundwater collection should be outlined in these plans. A protocol for well purging and well development stabilization techniques should be submitted. WCI must also clarify their written discussion of how head space analyses will be conducted for the soil borings.

I trust these minor difficulties can be resolved in the relatively near future in order for our cooperative environmental investigation to proceed in timely fashion beginning the week of June 5, 1989. If you have further questions or comments please direct them to Mr. Allen A. Debus of my staff at (312) 886-6186.

Sincerely,

Charles B. Slaustas, Chief
MN/WI Section, RPB

cc: Kevin Veach, MPCA

5hr-13/DEBUS/ad/5-16-89/wrr disk/wcisampl

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| 3-18 INIT. DATE | ① | CBA for B | | | | 5/19 | | |

pace

laboratories, inc.

PROFESSIONAL ANALYTICAL CHEMISTRY & ENGINEERING

Offices:
Minneapolis, Minnesota
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May 17, 1989

Mr. Kevin Veach
Permit and Review Unit
Hazardous Waste Section
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, MN 55155

Mr. Allen Debus
U.S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, IL 60604

Re: Proposed Sampling Work Plan; Addendum #1;
WCI Freezer Division; St. Cloud, Minnesota

Gentlemen:

I am writing to clarify various items discussed during a telephone conversation with Mr. Veach on May 16, 1989.

The items discussed were as follows:

1. You desire confirmation that a three inch split spoon will be used during the soil boring activities. A three inch split spoon will be used.
2. You desire field quality assurance information concerning PACE's standard chain of custody procedures, bottle and bailer preparation procedures and our field filtration procedures. A copy of our Groundwater Monitoring Field Quality Assurance Manual is enclosed for your records.
3. You desire documentation of our laboratory quality assurance procedures. A copy of PACE's current Quality Assurance Plan is enclosed for your records.
4. You desire a description of the steps and timing for well development activities. The wells are scheduled for installation during the first half of the week beginning June 4, 1989. Braun Engineering Testing, Inc. will develop the wells on June 9, 1989 by jetting and pumping as needed to provide nearly sediment-free water. The wells will be allowed to stabilize over the following week and we anticipate sampling the wells on June 19 or 20, 1989.

RECEIVED
MAY 19 1989
OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V

Mr. Kevin Veach
Mr. Allen Debus
PACE Project No. 890228.120
May 17, 1989
Page 2

5. You desire clarification that HNU meter screening will be provided on the background soil boring. The samples will be so screened and two samples with the highest readings will be submitted to the laboratory for volatile organic compound (VOC) analyses (EPA SW 846 Method 8240). Soil from samples having lower organic screening concentrations than the two highest readings will, upon request, be properly preserved and made available to the MPCA and/or the U.S. EPA for additional VOC analyses.

Please contact me if you have any questions about the items above.

Sincerely,



Daniel A. Comeau
Environmental Scientist

DAC222/mc

Enclosures

cc: Richard B. Clute, WCI
Dale Stephenson, Esq., Squire,
Sanders & Dempsey

May 3, 1989

Mr. Kevin Veach
Permit and Review Unit
Hazardous Waste Section
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, MN 55155

Mr. Allen A. Debus
U.S. Environmental Protection
Agency -- Region V
230 South Dearborn Street
Chicago, IL 60604

Gentlemen:

I am submitting WCI's Proposed Sampling Work Plan which was prepared by our consultants Pace Laboratories, Inc. I understand that Dan Comeau from Pace has communicated directly with Kevin Veach in preparing this plan. We look forward to your prompt concurrence in this proposal so that we can proceed with the work on schedule.

Please contact Dan Comeau if you have any technical questions. Otherwise, please feel free to contact either me or Dale Stephenson if you would like to discuss this further.

Sincerely,



Richard B. Clute
Environmental Affairs Coordinator

RBC/ski
Enclosure

cc: Mary L. Fulghum, Esq. (w/encl.)
James L. Calhoun (w/encl.)
Raymond G. Dauscher, Esq. (w/encl.)
Dale E. Stephenson, Esq. (wo/encl.)
Daniel A. Comeau (wo/encl.)

Squire, Sanders & Dempsey

Additional Offices:
Brussels, Belgium
Columbus, Ohio
Miami, Florida
New York, New York
Phoenix, Arizona
Washington, D.C.

Counsellors at Law
1800 Huntington Building
Cleveland, Ohio 44115

November 16, 1988

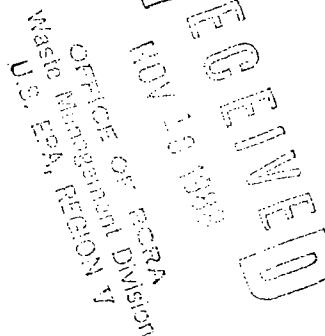
Telephone (216) 687-8500
Cable "Squersand"
Tele. 985-661
Telex 1 (216) 687-8777
Telex 2 (216) 687-8780

Direct Dial Number

(216) 687-8675

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Charles B. Slaustas
Chief, Minnesota/Wisconsin Section
U.S. EPA - Region V
230 South Dearborn Street
Chicago, Illinois 60604



Re: WCI Freezer Division (St. Cloud, Minnesota)
White Consolidated Industries, Inc.

Dear Mr. Slaustas:

I am writing on behalf of White Consolidated Industries, Inc. ("WCI") in response to requests from U.S. EPA and the Minnesota Pollution Control Agency ("MPCA") to take soil boring samples, and install and sample groundwater monitoring wells, as part of a "RCRA Facility Assessment" at the WCI Freezer Division in St. Cloud, Minnesota. We have discussed this matter with both Allen Debus of your staff and Kevin Veach at the MPCA, and indicated that while WCI questions the regulatory authority asserted by the Agencies, the company would retain an independent consultant to review the proposed Sampling Plan and develop an informed response to the proposed Assessment. Of course, if any investigation is to be conducted on WCI's property regarding non-RCRA units (including both the pre-RCRA holding pond which was properly closed under an MPCA-approved plan and the RCRA-exempt empty drum storage area), WCI fully reserves its rights to do the investigation itself, and objects to any attempt by U.S. EPA, MPCA or their contractors to enter the property and take any unilateral action such as performing soil borings or installing monitoring wells. WCI is willing, however, to undertake some voluntary investigation activities and continue to work cooperatively and in good faith with U.S. EPA and the MPCA.

Squire, Sanders & Dempsey

Mr. Charles B. Slaustas
November 16, 1988
Page Two

Initially, WCI does not believe that the statutory and regulatory provisions cited in your August 26, 1988 letter provide a right for the Agencies to unilaterally undertake or require implementation of the proposed Sampling Plan in the specific context of the closed, pre-RCRA holding pond area or the closed, RCRA-exempt empty drum storage area. First, the old wastewater holding pond at WCI's St. Cloud facility was subject to a State-approved closure back in 1979, with 5,200 cubic yards of sediment and associated soils being removed, confirmatory samples of underlying soils taken and analyses provided to the MPCA, and proper backfilling of the area with clean soil. The area is presently covered by a warehouse building which was constructed in 1979. Second, the area previously used for storage of empty product containers prior to returning them to suppliers did not involve any RCRA-regulated activity. See, e.g., 40 C.F.R. §261.7. The WCI Freezer Division has never operated any RCRA-regulated treatment or disposal facility, and has concluded all requirements for maintaining generator-only status, as indicated in the MPCA's formal determination issued on July 28, 1988:

This is to advise you that your request for a change in status to that of a generator accumulating waste on-site in accordance with applicable Minnesota Hazardous Waste Rules has been approved. This letter constitutes the final administrative action on your hazardous waste facility permit application for the St. Cloud Facility.

[See July 28, 1988 letter from Richard A. Svanda, P.E., which identified you as a co-correspondent.] Thus, the facility is not seeking, and is not required to seek, any RCRA permit under 42 U.S.C. Section 6921 et seq.

The Agencies' request for a detailed "RCRA Facility Assessment" included a proposal to take soil borings and install groundwater monitoring wells around the closed, pre-RCRA holding pond, and take soil borings around the RCRA-exempt empty container storage area. First, RCRA Section 3007(a), 42 U.S.C. § 6927(a), only provides the Agency with inspection and sampling authority regarding RCRA "hazardous wastes." Of course, the area of the holding pond which was closed in 1979 cannot possibly meet that definition. First, accumulated sediments and residual materials were removed under the direction of the MPCA back in 1979. Further, it would be impossible to have generated a RCRA "hazardous waste" before the operative regulations were promulgated or became effective in 1980. Accordingly, U.S. EPA Federal Register statements from 1978 to the present expressly recognize the exclusion of pre-RCRA wastes and sites from general RCRA regulation:

Squire, Sanders & Dempsey

Mr. Charles B. Slaustas
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Page Three

RCRA is written in the present tense and its regulatory scheme is organized in a way which seems to contemplate coverage only of those facilities which continue to operate after the effective date of the regulations.

[43 Fed. Reg. 58946, 58984 (December 18, 1978); see also 45 Fed. Reg. 12746, 12747 (February 26, 1980), 45 Fed. Reg. 33154, 33170 (May 19, 1980).] Since materials generated before the categories of listed and characteristic "hazardous wastes" were adopted in 1980 are not subject to RCRA, the Agencies' reliance on Section 3007(a) is misplaced. The pre-RCRA exclusion is also confirmed by U.S. EPA in secondary guidance materials. For example, U.S. EPA's publication "Questions and Answers On Hazardous Waste Regulations," Doc. No. SW-853, contains the following dialogue:

[QUESTION] If a plant ceases on-site disposal prior to November 19, 1980, is it subject to the RCRA regulations?

[ANSWER] No. The regulations apply only to hazardous waste treatment, storage or disposal facilities that either are in operation or begin operation on or after November 19, 1980, the effective date of the regulations. If, however, the on-site facility was handling hazardous waste on the date of promulgation of the regulations (May 19, 1980), the owner or operator must notify under Section 3010 of RCRA, even though the facility closed before the regulations became effective

The on-site facility would be an inactive facility, which is defined as "inactive portion" in Section 260.10 [now 40 C.F.R. § 260.10]. An inactive facility is subject to Section 7003 of RCRA. Under this section of the statute, EPA can seek injunctive action to remedy an imminent hazard's [sic] being caused by the facility.

The first time that RCRA "hazardous wastes" were given an operative definition was on May 19, 1980, and materials generated before that date cannot be RCRA "hazardous wastes."

Squire, Sanders & Dempsey

Mr. Charles B. Slaustas
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Page Four

It is also important to note that, even if WCI's closed, pre-RCRA holding pond was considered to involve RCRA "hazardous wastes" (which WCI disputes), the appropriate authority for detailed monitoring, testing and analysis (as opposed to general inspections and sampling of presently regulated waste materials) would be found under RCRA Section 3013, 42 U.S.C. § 6934. Under that section, however, the regulatory procedure for pursuing such activities would be through (1) a determination that RCRA hazardous wastes "may present a substantial hazard to human health or the environment," and (2) issuance of an administrative order. Even in this context, the Agency does not have unilateral authority to go in and undertake work on its own, but can only direct the owner or operator to submit and implement its own "proposal for carrying out the required monitoring, testing, analysis and reporting." 42 U.S.C. § 6934(c). See, e.g., In re Order Pursuant to Section 3013(a) RCRA, 550 F.Supp. 1361 (W.D. Wash., 1982). Of course, this provision is again premised on the presence of RCRA hazardous wastes (which are not involved in WCI's closed, pre-RCRA holding pond), and U.S. EPA's present request does not claim to be submitted under the authority of Section 3013.

I understand from speaking with Allen Debus and Kevin Veach (and from your August 26, 1988 letter) that the Agencies also consider the requested investigation to be authorized under the "corrective action" provisions of the Hazardous and Solid Waste Amendments of 1984. The statutory authority for corrective action in RCRA Section 3004(u), 42 U.S.C. § 6924(u), only applies to situations "at a treatment, storage, or disposal facility seeking a permit under this subchapter" [Emphasis supplied.] Since WCI is not "seeking a permit," the Agencies' reliance on this provision is misplaced. Further, the corrective action authority would only apply to circumstances where there are identified "releases of hazardous waste or constituents," and your August 26, 1988 letter acknowledges that the "purpose of the proposed sampling visit [is] to determine whether releases have ever occurred. . . ." Neither Section 3004(u) nor the implementing regulations for RCRA corrective action provide an independent basis for requiring investigation and monitoring relating to non-RCRA units which are not known to involve "releases of hazardous waste or constituents."

The limited scope of the corrective action authority is also reflected in the derivative regulatory enactment. In the final rulemaking published at 50 Fed. Reg. 28746 (July 15, 1985), the regulations requiring corrective action activities were promulgated in 40 C.F.R. Part 264 (at 40 C.F.R. §§ 264.100 and 264.101). Consistent with the express statutory scope, the regulations in Part 264 apply prospectively and only to facilities seeking (or required to seek) a final Part B RCRA permit. As noted in United

Squire, Sanders & Dempsey

Mr. Charles B. Slaustas
November 16, 1988
Page Five

Technologies Corp. v. U.S. EPA, 821 F.2d 714, 722 (D.C. Cir. 1987), "Section 3004(u), in essence, creates the broad duty to take corrective action as a quid pro quo to obtaining a permit." (Emphasis supplied.) Since WCI is not seeking such a permit, and has been certified by the MPCA as having achieved final closure and exemption from any requirement to pursue a final permit, Part 264 (including §§ 264.100 and 264.101) is inapplicable to WCI's St. Cloud facility. See 40 C.F.R. §§ 264.1 and 264.3. Part 264 applies only to regulated TSD facilities seeking a final permit, and the St. Cloud plant is not such a facility.

The only remaining "corrective action" authority included in the Hazardous and Solid Waste Amendment of 1984 is contained in RCRA Section 3008(h), 42 U.S.C. § 6928(h), which provides for issuance of "an order requiring corrective action or such other response measure" to "a facility authorized to operate under section 6925(e) of this title" As indicated above, WCI's St. Cloud facility has been certified by the MPCA to not require a RCRA permit (i.e., it does not require authorization "to operate under Section 6925(e)"), and Section 3008(h) of RCRA, 42 U.S.C. § 6928(h), is likewise inapplicable. In any event, the Agencies' request to conduct an investigation relating to the closed, pre-RCRA holding pond and the RCRA-exempt empty container storage area is admittedly not based on any determination (1) "that there is or has been a release of hazardous waste into the environment"; or (2) that any such a release could be "from a facility authorized to operate" under RCRA.

WCI believes that the Agencies' authority is limited to entering the facility at reasonable times to investigate, inspect or obtain samples directly relating to RCRA hazardous wastes. 42 U.S.C. § 6927(a). In addition, RCRA Section 3013 allows the Agencies to issue an order seeking a company's proposal to carry out "monitoring, testing, analysis, and reporting," if a determination has been made that the presence or release of RCRA hazardous wastes "may present a substantial hazard to human health or the environment." 42 U.S.C. § 6934. Neither the closed holding pond from which pre-RCRA materials were removed in 1979, nor the RCRA-exempt empty container storage area which is no longer used, presents a situation where the inspection, monitoring, analysis and testing provisions of RCRA would be applicable.

Despite the apparent lack of statutory authorization for the activities requested by the Agencies, WCI wants to continue its policy and practice of working constructively with regulatory agencies whenever possible. Toward that end, WCI is willing to pursue, at its own cost, a limited investigation of the closed holding pond and empty container storage areas. First, WCI agrees

Squire, Sanders & Dempsey

Mr. Charles B. Slaustas
November 16, 1988
Page Six

to voluntarily take the two (2) soil borings, and perform related sampling and analysis, relating to the empty container storage area. With respect to the closed, pre-RCRA holding pond, WCI believes that a more limited initial investigation would be appropriate.

Since the expenses of excessive drilling and laboratory work rapidly inflate costs, WCI will limit the investigation relating to the closed, pre-RCRA holding pond to two (2) soil borings and two (2) downgradient monitoring wells. In addition, background soil samples will be collected. I understand that groundwater flow direction is well defined in this area, and two down gradient wells should provide an adequate system to identify any concerns. Similarly, limiting the soil sampling to two (rather than four) borings should avoid unnecessary duplicative work. If this initial assessment indicates substantive reasons to expand the preliminary investigation, WCI will consider the need for additional work. Finally, WCI does not perceive any reason for performing repetitive analyses of soil borings in this situation. WCI will collect split samples at 2 1/2 foot intervals from each of the 4 borings, with one portion to be preserved for laboratory analysis and one portion for head space analysis. The two samples from each boring indicating the highest levels of volatile organics will undergo extraction and laboratory analysis for volatile organic compounds (VOCs) according to EPA SW 846 methods. In addition, both of the soil borings in the area of the closed holding pond (as well as the background boring) will have five samples analyzed for RAS total metals.

Screen only

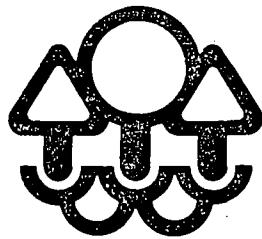
I trust that this voluntary effort by WCI will satisfy the Agencies' concerns. Please do not hesitate to call if you have any questions regarding this matter. WCI will work directly with Allen Debus and Kevin Veach to implement the activities agreed to by this letter, which will be overseen by Dan Comeau at Pace Laboratories.

Sincerely yours,

Dale E. Stephenson
Dale E. Stephenson

DES/kb

cc: Kevin Veach
Allen A. Debus
James L. Calhoun
Raymond G. Dauscher, Esq.
Daniel Marques
Daniel Comeau



Minnesota Pollution Control Agency

520 Lafayette Road, Saint Paul, Minnesota 55155

Telephone (612) 296-6300



July 10, 1990

RECEIVED
JUL 12 1990
OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V

Mr. Richard Clute
Environmental Affairs Coordinator
WCI Freezer Division
701 33rd Avenue North
St. Cloud, Minnesota 56303

RE: WCI, St. Cloud, EPA Identification Number MND092304856

Dear Mr. Clute:

The RCRA Facility Assessment (RFA) of the above-referenced facility has been completed. Based on the results of soil and ground water analyses, the conclusion of the RFA is that no further investigation is justified. Enclosed is a copy of the letter of transmittal of the RFA report to the U.S. Environmental Protection Agency (EPA). The EPA agrees with the conclusion of the RFA report. This conclusion effectively completes the closure process at this facility.

If you have any questions or comments, please call Sarah Sevcik of my staff at 612-642-0432.

Sincerely,

Thomas B Townsend for

Bruce W. Brott, P.E., Supervisor
Permit and Review Unit
Regulatory Compliance Section
Hazardous Waste Division

BWB:mk

cc: Mr. Charles Slaustas U.S. Environmental Protection Agency, Chicago

Mr. Daniel Marquis, P.E.
WCI Major Appliance Group
P.O. Box 182056
Columbus, OH 43218

AUG 26 1986

RE: WCI Freezer
MND092304856

Dear Mr. Marquis:

The United States Environmental Protection Agency (U.S. EPA) requests clearance to conduct a RCRA Facility Assessment sampling visit beginning September 12, 1988. It is anticipated that the visit will require 1 week of dedicated activity by staff of the U.S. EPA, its contractors, who are Jacobs Engineering and Metcalf & Eddy, and also the Minnesota Pollution Control Agency (MPCA). It may be necessary to utilize portions of the following week for completing the intended scope of work. You have already been provided with the proposed sampling plan under separate cover.

Authority to conduct sampling of hazardous wastes rests in RCRA Section 3007(a), in which it is stated that U.S. EPA inspectors may "...enter...any establishment or other place...to inspect and obtain samples from any person of any such wastes..." Furthermore, as explained in the Federal Register, July 15, 1985, Vol. 50, pp. 28711 - 28712, owners and/or operators of facilities seeking a RCRA permit are subject to the corrective action provisions of the Hazardous and Solid Waste Amendments of 1984. Since your facility located in St. Cloud, Minnesota acquired interim status for operation of a hazardous waste container storage unit, WCI will be subject to such provisions. However, it is primarily the purpose of the proposed sampling visit to determine whether releases have ever occurred from solid waste management units operated at the site.

Unless written correspondence proves contrary, we will assume we have your consent to conduct the inspection pursuant to our statutory authority. Please contact Mr. Allen A. Debus of my staff, at (312) 836-6186, for further details.

Sincerely yours,

ORIGINAL SIGNED BY
CHARLES B. SLAUSTAS

Charles B. Slaustas, Chief
MN/WI Section

cc: Kevin Veach, MPCA

| REG. PERMITS | TYP. | AUTH. | IE CHIEF | IN. CHIEF | MI. CHIEF | MN/WI CHIEF | OH. CHIEF | RPB CHIEF | O.R. ADD. | RECD. BY |
|--------------|------|-------|----------|-----------|-----------|-------------|-----------|-----------|-----------|----------|
| INITIAL DATE | 8/26 | 8-26 | | | | 8/26 | | | | |

5HR-13

Mr. Daniel Marquis, P.E.
 WCI Major Appliance Group
 P.O. Box 182056
 Columbus, OH 43218

AUG 26 1988

RE: WCI Freezer
 MND092304856

Dear Mr. Marquis:

The United States Environmental Protection Agency (U.S. EPA) requests clearance to conduct a RCRA Facility Assessment sampling visit beginning September 12, 1988. It is anticipated that the visit will require 1 week of dedicated activity by staff of the U.S. EPA, its contractors, who are Jacobs Engineering and Metcalf & Eddy, and also the Minnesota Pollution Control Agency (MPCA). It may be necessary to utilize portions of the following week for completing the intended scope of work. You have already been provided with the proposed sampling plan under separate cover.

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Unless written correspondence proves contrary, we will assume we have your consent to conduct the inspection pursuant to our statutory authority. Please contact Mr. Allen A. Debus of my staff, at (312) 886-6186, for further details.

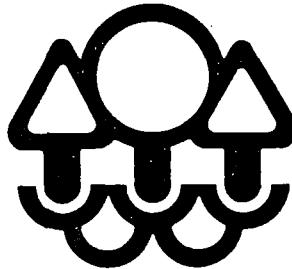
Sincerely yours,

ORIGINAL SIGNED BY
CHARLES B. SLAUSTAS

Charles B. Slaustas, Chief
 MN/WI Section

cc: Kevin Veach, MPCA

| RCRA PERMITS | TYP. | AUTHR. | IE CHIEF | IN. CHIEF | MI. CHIEF | MN/WI CHIEF | OH. CHIEF | RPB CHIEF | O.R. ADD. | WASH. LINE |
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| INIT. DATE | 7/26 | 8/26 | 8/26 | | | CJW | 8/14 | | | |



Minnesota Pollution Control Agency

OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V

AUG 16 1988

RECEIVED
D

August 12, 1988

Mr. Daniel Marques, P.E.
WCI Major Appliance Group
P.O. Box 182056
Columbus, Ohio 43218

Dear Mr. Marques:

RE: RCRA Facility Assessment, WCI Freezer Division
St. Cloud, Minnesota

I am writing to request some additional information which will help the Minnesota Pollution Control Agency (MPCA) complete its investigation at WCI's St. Cloud facility. In 1986, U.S. Environmental Protection Agency (EPA) contractors began a RCRA Facility Assessment (RFA) of the St. Cloud facility. Their report concluded that sampling should be done in two areas to determine the existence of soil or ground water contamination. These areas are the empty container storage area south of the paint building and the area of the former wastewater lagoon. We are currently developing a sampling plan for these areas. As I discussed with Mr. Dick Clute on August 4, 1988, the sampling would tentatively include two soil borings in the container area and four soil borings and three monitoring wells related to the former lagoon. The parameters to be tested include metals and volatile organic compounds. Samples would be collected by an EPA contractor and could be split with WCI if you wish. We would like to do the sampling during the week of September 12. As we previously discussed, the MPCA will provide you with a final sampling plan when one is completed, most likely by August 22.

If possible, we will conduct all of the lagoon related soil borings outside of the warehouse building in order to avoid disrupting warehouse activities. Please assist us in this by sending us blueprints or drawings which accurately show the boundaries and locations of the lagoon and the new warehouse addition which lies over it. We wish to determine the boundaries of the former lagoon with respect to the new warehouse addition. If possible the drawings should have a scale of at least one inch = 100 feet, show the date of the lagoon drawing and show distances from both 8th Street North and the west walls of the old warehouse building.

Phone: _____

520 Lafayette Road, St. Paul, Minnesota 55155
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Equal Opportunity Employer

Mr. Daniel Marques, P.E.
Page Two

Please send us your response by August 22. If you have any questions, please call me at 612/296-8582.

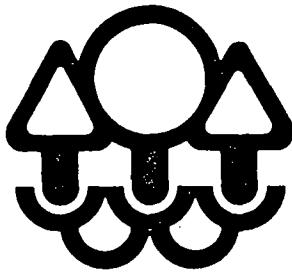
Sincerely,

Kevin Veach
Kevin Veach
Permit and Review Unit
Hazardous Waste Section
Hazardous Waste Division

KV:dmf

cc: Dick Clute, WCI, Freezer Division, St. Cloud
Chuck Slaustas, EPA, Region V, Chicago

C. Slawter



Minnesota Pollution Control Agency

October 28, 1986

Mr. Daniel Marques
WCI Appliance Group
300 Philipi Road
P. O. Box 182056
Columbus, Ohio 43218

RECEIVED
OCT 30 1986
SOLID WASTE DIVISION
U.S. EPA, REGION V

Dear Mr. Marques:

RE: Response to October 15 Meeting with Franklin Manufacturing Company

Thank you for your prompt response to our meeting on October 15 at the Minnesota Pollution Control Agency (MPCA) office. Please allow me to expand and clarify a few points in your letter.

Representing the MPCA at the meeting were Steven A. Reed, Supervisor; Kevin C. Veach, Project Engineer; and George E. Johnson, Project Hydrologist; Bruce Nelson was not present.

Copies of items 4, 6, 7, and 8 of the September 8, 1986 MPCA letter were mailed to Dick Clute of Franklin Mfg. on Thursday October 16.

On October 21 a letter was sent to Dick Clute describing the goals and stages of the RCRA Facility Assessment (RFA) as well as a detailed list of items to be reviewed during a visual site inspection. As mentioned in the meeting, the purpose of the RFA is to determine the need for further investigation of releases. Contrary to your statement on page two of your letter, the MPCA did not state that an RFA would be limited to a visual site inspection. As I stated explicitly, the RFA may include a sampling visit if it is needed. We did agree that if a sampling visit is needed, a detailed sampling plan and sampling date will be discussed with representatives of Franklin Mfg. prior to the visit.

Phone: _____

1935 West County Road B2, Roseville, Minnesota 55113-2785

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Equal Opportunity Employer

Mr. Daniel Marques
Page Two

If you have any questions please feel free to contact Kevin Veach at
612/297-1794.

Sincerely,

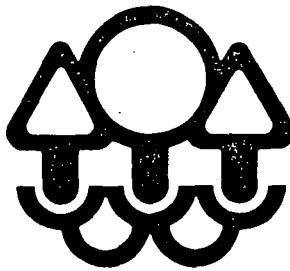

Steven A. Reed, P.E., Supervisor
Hazardous Waste Permit and Review Unit
Hazardous Waste Section
Solid and Hazardous Waste Division

SAR:KV:cv

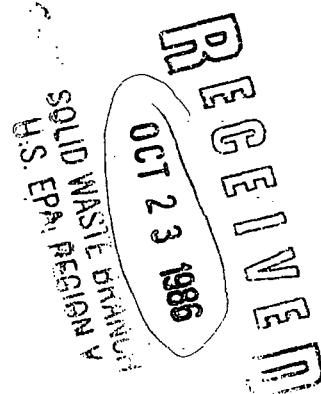
cc: Richard Clute, Franklin Mfg.
Charles Slaustas, Region V, EPA

C. Shastas

MN D092304 856



Minnesota Pollution Control Agency



Mr. Richard Clute
Franklin Manufacturing Company
701 - 33rd Avenue North
St. Cloud, Minnesota 56301

Dear Mr. Clute:

As part of the permitting process under the 1984 Resource Conservation Recovery Act (RCRA) amendments, a RCRA Facility Assessment (RFA) is required of your facility. The objective of this review is to determine whether there have been, or are likely to be, releases of hazardous wastes or hazardous constituents at the facility which require further investigation. This analysis will provide information to establish the need for subsequent remedial investigations. The first stage of the RFA is a preliminary review (PR) which consists of a search of all files which may be obtained prior to a site visit. The goals of the PR are to identify solid waste management units and gather information on possible releases.

The second stage of this analysis is a site visit to your facility to verify and determine the location of all "Solid Waste Management Units" (SWMUs). We are requesting permission for a U.S. Environmental Protection Agency (EPA) contractor to visit your facility for the purpose of a visual inspection of these SWMUs. This site visit is to enable the contractor to attain a technical understanding of current and historical waste flows. Photographs of each SWMU are to be taken to document conditions at the facility and waste management procedures used. No samples will be taken during this site visit.

As a final stage of the RFA, sampling may be required. If sampling is required, you will be contacted by the Minnesota Pollution Control Agency and a sampling plan and date will be arranged prior to the sampling visit.

Phone: _____

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Mr. Richard Clute
Page Two

The contractor may require the assistance of some of your personnel in reviewing solid waste flow, associated units, past and present disposal practices, etc. The attachment to this letter is a partial list of items which the contractor will consider during the site visit to clarify and supplement previously submitted information. The list is separated into general items and items related to specific SWMUs. Additional issues may be reviewed at the time of the site visit.

We would like to conduct the site visit during the week of October 27, 1986. Should you have any questions please contact Kevin Veach of my staff at 612/297-1794.

Sincerely,

George Pruchnoffski, P.E.
for

Steven A. Reed, P.E., Supervisor
Hazardous Waste Permit and Review Unit
Hazardous Waste Section
Solid and Hazardous Waste Division

SAR/jmh

Enclosure

cc: Mr. Charles Slaustas, EPA Region V, Illinois



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF:

FEB 14 1984

Dale E. Stephenson, Esq.
Squire, Sanders, & Dempsey
1800 Huntington Building
Cleveland, Ohio 44115

Re: White Consolidated Industries,
Inc., Freezer Division, St.
Cloud, MN

Dear Mr. Stephenson:

I have reviewed your letter to Mr. Charles B. Slaustas questioning U.S. EPA's authority to conduct soil sampling and groundwater monitoring at the White Consolidated Industries, Inc. Freezer Division in St. Cloud, Minnesota (WCI). As you might expect, the Agency's interpretation of its inspection, sampling, and corrective action authority is somewhat broader than that which you articulated.

As your letter acknowledged, pursuant to RCRA Section 3007(a), U.S. EPA has authority to enter, at reasonable times, any facility where hazardous wastes are or have been generated, stored, disposed of, or transported from, to inspect and obtain samples of such wastes. RCRA does not limit the Agency's inspection and sampling authority to Solid Waste Management Units (SWMUs). EPA may inspect any area in which hazardous wastes may be or may have been stored, and take background samples if helpful to aid in the detection of releases. There is simply no mention of SWMUs in 3007(a) or any indication that Congress implicitly intended to limit EPA's inspection and sampling authority to SWMUs. The purpose of an inspection and sampling visit is to detect the presence of hazardous wastes. The Agency can not countenance an interpretation that would emasculate its ability to pursue RCRA's broad remedial goals.

The Agency rejects the view that it is "impossible to have generated a RCRA hazardous waste before the regulations were promulgated or became effective," and as a result, only hazardous waste management units operating at the time of RCRA's enactment are subject to EPA's sampling and monitoring authority. While RCRA is generally characterized as a prospective regulatory scheme, it clearly relates to present and future conditions resulting from past disposal practices, including releases of hazardous waste from closed, pre-RCRA units within facilities.

Dale E. Stephenson
Page Two

This view has been upheld by the federal courts in U.S. v. Northeastern Pharmaceutical, 810 F.2d 726, 741, (8th Cir. 1986) and U.S. v. Price, 523 F.Supp. 1055, 1071-72 (D. N.J. 1981).

In addition, as you observed, RCRA Section 3013 empowers the Agency to order a facility to conduct monitoring and analysis that the Agency deems reasonable to ascertain the nature and extent of the release of hazardous wastes from a facility at which hazardous waste has been stored or disposed of. Such monitoring may be carried out by the Agency if it is determined that the facility could not carry out the monitoring in a satisfactory manner. RCRA Section 3013(d)(1).

Also, the dialogue quoted from the U.S. EPA publication discusses whether a facility that ceased disposal prior to date of promulgation of RCRA would be regulated under RCRA. It does not address whether a release of hazardous waste from a unit closed prior to RCRA but within a RCRA storage facility may be subject to RCRA regulations. Moreover, the statement that an inactive facility is subject to Section 7003 does not limit the EPA solely to injunctive relief to remedy an imminent hazard.

You would also limit the Agency's 3008(h) corrective action authority to only those facilities presently authorized to operate a treatment, storage, or disposal facility. The Agency and the federal courts have a more generous view of EPA's Section 3008(h) authority. The Agency has routinely exercised corrective action authority over facilities that did not obtain interim status, lost interim status, and facilities whose interim status was terminated following certification of clean closure. The agency interprets the language of Section 3008(h)(1), specifically "release of hazardous waste into the environment from a facility authorized to operate under 6925(e)" to mean that the corrective action provisions are applicable to a facility that should have been authorized, is presently authorized, or was authorized, at any time, to operate under interim status. This approach is consistent with Congressional intent to assure that significant environmental problems are addressed at facilities that have treated, stored, or disposed of hazardous waste. See U.S. v. Indiana Woodtreating, 686 F.Supp. 218 (S.D. IND. 1988) holding that 3008(h) applies to facilities that have never obtained interim status and U.S. v. Clow Water Systems, F.Supp. ___, slip op. C2-87-720, Lexis 14666 (S.D. Ohio, Eastern Division, December 19, 1988), applying 3008(h) to facility that lost interim status.

Furthermore, Clow holds that 3008(h) encompasses hazardous constituents as well as hazardous waste. The Court found that the EPA's interpretation that "hazardous wastes" as used in 3008(h) also includes hazardous constituents, was reasonable and

Dale E. Stephenson
Page Three

consistent with Congressional intent and the Agency's regulations.

Note also that Section 3008(h) applies to releases of hazardous waste from a facility and is not limited to solely releases from hazardous waste management units.

U.S. EPA is encouraged by WCI's willingness to voluntarily conduct elements of the proposed sampling plan. With two exceptions, WCI must adhere to the proposed sampling plan to ensure that the sampling scheme will provide valid, informative data that will permit U.S. EPA to determine whether further remedial work is or is not required.

WCI's proposal to take two soil borings instead of four, from the vicinity of the old lagoon, is acceptable to U.S. EPA. All other terms of the proposed sampling scheme, including the installation of an upgradient monitoring well, must be followed.

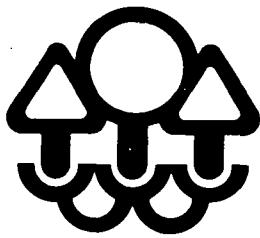
WCI may use its own contracted drilling equipment and sampling crews. At a minimum, however, U.S. EPA and MPCA personnel and their authorized representatives must be granted site access to observe all phases of well installation, sampling, and soil borings and to obtain split samples from each point sampled. This permission must also extend to all monitoring/sampling activities subsequent to the initial sampling taken at the time the wells are installed.

U.S. EPA is confident of its authority to proceed with the proposed sampling and monitoring plans. Nonetheless, the Agency is pleased with WCI's offer to participate in the investigation and is willing to permit WCI to conduct the sampling and monitoring program as outlined in this letter. In light of the Agency's position I believe this matter is susceptible to a quick resolution acceptable to all parties.

Sincerely,

Mary L Fulghum
Mary L. Fulghum
Assistant Régional Counsel
(312) 886-5313

cc: Daniel Marquis
Charles B. Slaustas
Allen Debus
Kevin Veach



Minnesota Pollution Control Agency

520 Lafayette Road, Saint Paul, Minnesota 55155
Telephone (612) 296-6300



April 30, 1990

Mr. Charles Slaustas
U.S. Environmental Protection Agency
Region V 5HR-13
230 South Dearborn Street
Chicago, Illinois 60605

Dear Mr. Slaustas:

RE: RCRA Facility Assessment (RFA)
for WCI, St. Cloud, EPA I.D. MND092304856

Enclosed is the completed RFA report for WCI Freezer Division in St. Cloud, Minnesota. I have not sent copies of the text of the following sections because they should already be in your files:

III. Visual Site Inspection Report, by AT Kearney;
VI.A. Soil Analysis Report, by Region V Central Regional Laboratory;
VI.B. Groundwater Analysis Report, by Region V Central Regional Laboratory;
Appendix 3. Groundwater Sampling Visit Report, by Metcalf and Eddy,
September 1989.

Also, I have corrected an error on page 2 of the Metcalf and Eddy, September 1989, ground water sampling report. Please insert the enclosed page into your copy of the report.

The conclusion of the RFA is that no further investigation is justified based on the soil and ground water analyses.

If you have any questions or comments, please call Bruce Brott at 612/642-0449. As a final goodbye let me say I have enjoyed working with you and your staff and I wish you all the best.

Sincerely,

Kevin C. Veach

Kevin C. Veach
Permit and Review Unit
Regulatory Compliance Section
Hazardous Waste Division

KCV:df

Enclosure

*Sarah
Sevcik
612-642-0432*

FACILITY ASSESSMENT
for WCI FREEZER DIVISION
ST. CLOUD, MINNESOTA
EPA. ID #MND092304856

by the Minnesota Pollution Control Agency

April, 1990

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- IV. Sampling Plan**
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- V. Sampling Visit Description**
 - A. Soil,**
 - B. Ground Water, (Metcalf and Eddy, Inc.)**
- VI. Sampling Results**
 - A. Soil**
 - B. Ground Water**
- VII. Conclusions**
 - A. Soil**
 - B. Ground Water**

Appendix 1. MPCA Sampling Plan

Appendix 2. Soil Sampling Field Notes and Chain of Custody

Appendix 3. Ground Water Sampling Visit Report

Appendix 4. WCI Sampling Data

I. INTRODUCTION

This report presents a RCRA Facility Assessment (RFA) for the WCI Freezer Division facility at 701 33rd Avenue North, St. Cloud, Minnesota U.S. EPA (Environmental Protection Agency) identification number MND092304856. Under the Hazardous and Solid Waste Amendments of 1984 (HSWA), corrective action is required where necessary at all hazardous waste facilities. As part of the corrective action process, the WCI facility was investigated by the U.S. EPA and the Minnesota Pollution Control Agency (MPCA) to determine whether releases of hazardous constituents to the environment had occurred. Part of this work was undertaken by the MPCA and part by contractors for the U.S. EPA. This report covers all phases of the RFA process which include: 1) a Preliminary Review (PR) of all existing records pertaining to the site, 2) a Visual Site Inspection (VSI) conducted to identify all sources of potential releases and 3) a Sampling Visit (SV) to obtain any samples necessary to determine if there are any releases which require further investigation.

II. EXECUTIVE SUMMARY

White Consolidated Industries, Freezer Division, (WCI), formerly Franklin Manufacturing Company, is a freezer manufacturer located in the northwest part of St. Cloud, Minnesota. Franklin submitted a Part A notification in 1980 as a hazardous waste storage facility. A Part B application was requested by the MPCA in February, 1985. In May, 1985 the Company requested closure of the facility and return to generator status. On July 28, 1988, after closure activities were completed, the MPCA approved a return to generator status for WCI Freezer Division. Prior to this, in 1986 a Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) was begun.

A PR was conducted by MPCA staff and also by Pope-Reid Associates under sub-contract to A.T. Kearney, Inc. for the U.S. EPA. A Visual Site Inspection (VSI) was conducted on November 13, 1986, by Pope-Reid with MPCA staff present. This process identified sixteen (16) Solid Waste Management Units (SWMUs). Two of these SWMUs were the regulated storage units. The PR/VSI report produced by Pope-Reid Associates was submitted to the MPCA in late 1987. Two SWMUs were recommended for sampling to determine whether hazardous constituents were released to the environment: 1) a wastewater lagoon which received phosphatizer and paint system wastewaters from 1965 to 1979 and 2) an outdoor empty container storage area. The PR/VSI report also recommended assessing the integrity of the sewer system. This was not done.

In 1988 the MPCA staff produced a sampling plan and along with EPA staff negotiated with WCI over site access and the extent of sampling. In June, 1989 soil samples were collected from a background location, the outdoor container storage area and from the lagoon area. One monitoring well was installed upgradient of the lagoon and two wells were installed downgradient of the lagoon. In August, 1989 the wells were sampled by the Company and the EPA contractor. The results of the analyses done for the regulatory agencies are included in the body of the report in Section VI. The analysis done for WCI is included as Appendix 4.

Results of both the soil sampling and the ground water sampling indicate no contamination which would justify continuing the investigation at this time. Some volatile hazardous constituents were detected in both the soil and the ground water samples. These compounds were also detected in the laboratory blanks and may be attributed to laboratory contamination. Toxic metals, where detected, were of such low levels as to be indistinguishable from background levels.

**III. VISUAL SITE INSPECTION
REPORT**

IV. SAMPLING PLAN

A. Introduction

A sampling plan was originally written by the MPCA for sampling of soil and ground water. This sampling plan is included as Appendix 1 to this report. WCI objected to having EPA contractors conduct borings and well installation on its property and offered to use its own contractor to undertake the sampling and to allow the regulatory agencies to be present to split samples. The MPCA and EPA agreed to this and required WCI to submit a sampling plan which would accomplish the objectives of the original MPCA sampling plan. The sampling plan produced by Pace Laboratories, Inc. for WCI was approved by the MPCA with concurrence from EPA subject to the addendum provided in the May 17, 1989, letter from Pace Laboratories and on the condition that MPCA would collect five volatile organics samples from each boring rather than two as proposed by WCI. The May 17, letter from Pace Laboratories follows the sampling plan. MPCA staff or EPA contractors were present to split all samples.

IV. B. Pace Laboratories, Inc. Sampling Plan

May 3, 1989

Mr. Kevin Veach
Permit and Review Unit
Hazardous Waste Section
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, MN 55155

RECEIVED

MAY 4 1989

MPCA, HAZARDOUS
WASTE DIVISION

Mr. Allen A. Debus
U.S. Environmental Protection
Agency -- Region V
230 South Dearborn Street
Chicago, IL 60604

Gentlemen:

I am submitting WCI's Proposed Sampling Work Plan which was prepared by our consultants Pace Laboratories, Inc. I understand that Dan Comeau from Pace has communicated directly with Kevin Veach in preparing this plan. We look forward to your prompt concurrence in this proposal so that we can proceed with the work on schedule.

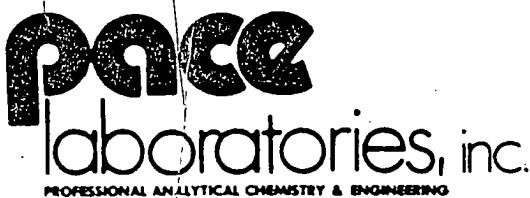
Please contact Dan Comeau if you have any technical questions. Otherwise, please feel free to contact either me or Dale Stephenson if you would like to discuss this further.

Sincerely,


Richard B. Clute
Environmental Affairs Coordinator

RBC/ski
Enclosure

cc: Mary L. Fulghum, Esq. (w/encl.)
James L. Calhoun (w/encl.)
Raymond G. Dauscher, Esq. (w/encl.)
Dale E. Stephenson, Esq. (wo/encl.)
Daniel A. Comeau (wo/encl.)



Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa

1710 Douglas Drive North □ Minneapolis, MN 55422 □ Phone (612) 544-5543 □ FAX (612) 544-3974

**Proposed Sampling Work Plan
WCI Freezer Division
St. Cloud, Minnesota**

Prepared For:

WCI Freezer Division
St. Cloud, Minnesota

Prepared By:

PACE Laboratories, Inc.
Minneapolis, Minnesota

Proposed Sampling Work Plan

WCI Freezer Division

St. Cloud, Minnesota

All 5 increments
analyzed
Empty Container and Lagoon

I. Empty Container Storage Area

Two soil borings will be drilled to a depth of 20 feet equidistant from the ends of the empty container storage area. Soil samples will be collected at 2 1/2 foot intervals using a split-spoon sampler. Samples will be screened utilizing a HNU Meter to detect organic contamination. Two samples from each borehole with the highest readings will be submitted to the laboratory for volatile organic compound (VOC) analysis (EPA SW 846 Method 8240). A discussion of the instrumentation and field screening procedure is provided in Section III below. Soil from samples having lower organic screening concentrations than the two highest readings will, upon request, be properly preserved and made available to the MPCA and/or the U.S. EPA for additional VOC analyses. Approximate sample locations are shown on Figure 1 (attached).

II. Closed Holding Pond

Near the closed holding pond, two soil borings will be drilled to a depth of 20 feet. Starting at the former base of the pond, soil samples will be collected at 2 1/2 foot intervals using a split-spoon sampler. Samples will be screened utilizing a HNU Meter to detect organic contamination. Two samples from each bore hole with the highest readings will be submitted to the laboratory for volatile organic compound analysis (EPA SW 846 /Method 8240). In addition, all samples below the depth of the pond from each boring will be analyzed for RAS total metals. Soil from samples having lower organic screening concentrations than the two highest readings will, upon request, be properly preserved and made available to the MPCA and/or the U.S. EPA for additional VOC analyses. Approximate sample locations are shown on Figure 1.

One background soil boring will be drilled to a depth of 20 feet. The background soil boring location will be selected based on site conditions. Soil samples will be collected with a split-spoon sampler at 2 1/2 foot intervals. The boring at this location will be drilled in a manner so as to also allow construction of an upgradient monitoring well (discussed below). Five soil samples, including those corresponding to the same depths as at the closed holding pond, will be analyzed for RAS total metals. Soil from samples having lower organic screening concentrations than the two highest readings will, upon request, be properly preserved and made available to the MPCA and/or the U.S. EPA for additional VOC analyses. The approximate sample location is shown on Figure 1.

Downgradient of the closed holding pond, two monitoring wells will be installed. Upgradient of the closed holding pond, one monitoring well will be installed in conjunction with the background soil boring.

The monitoring wells will be installed in accordance with Minnesota Department of Health regulations. The wells will be installed to intersect the water table. The monitoring wells will be constructed with 2 inch stainless steel screens and risers. The screens will be 10 feet long with #10 slot size. A 4 inch diameter protective casing with a locking cap will be installed. Three protective posts will also be installed around each monitoring well.

Following well installation and development, ground water samples from each monitoring well will be collected utilizing a dedicated stainless steel bailer. Field blanks for volatile organic compounds will be collected at each location and a travel blank will be provided. Collected samples will be analyzed for volatile organic compounds and RAS dissolved metals.

III. HNU Screening

Soil samples collected for volatile organic compound screening will be placed in 500 ml glass amber containers, sealed with plastic wrap and covered with a Teflon™ lined cap. Each bottle will be half filled with sample. The soil container will be allowed to equilibrate in a warm location for 30 minutes. The sample will then be screened for the presence of volatile organic compounds using a HNU Model ISPI-101 trace gas analyzer supplied with a 10.2 eV lamp.

Selected portions of the HNU instruction manual are attached which describe the instrument, it's calibration and the relative photoionization sensitivities of various gases to the 10.2 eV lamp.

IV. Anticipated Project Schedule

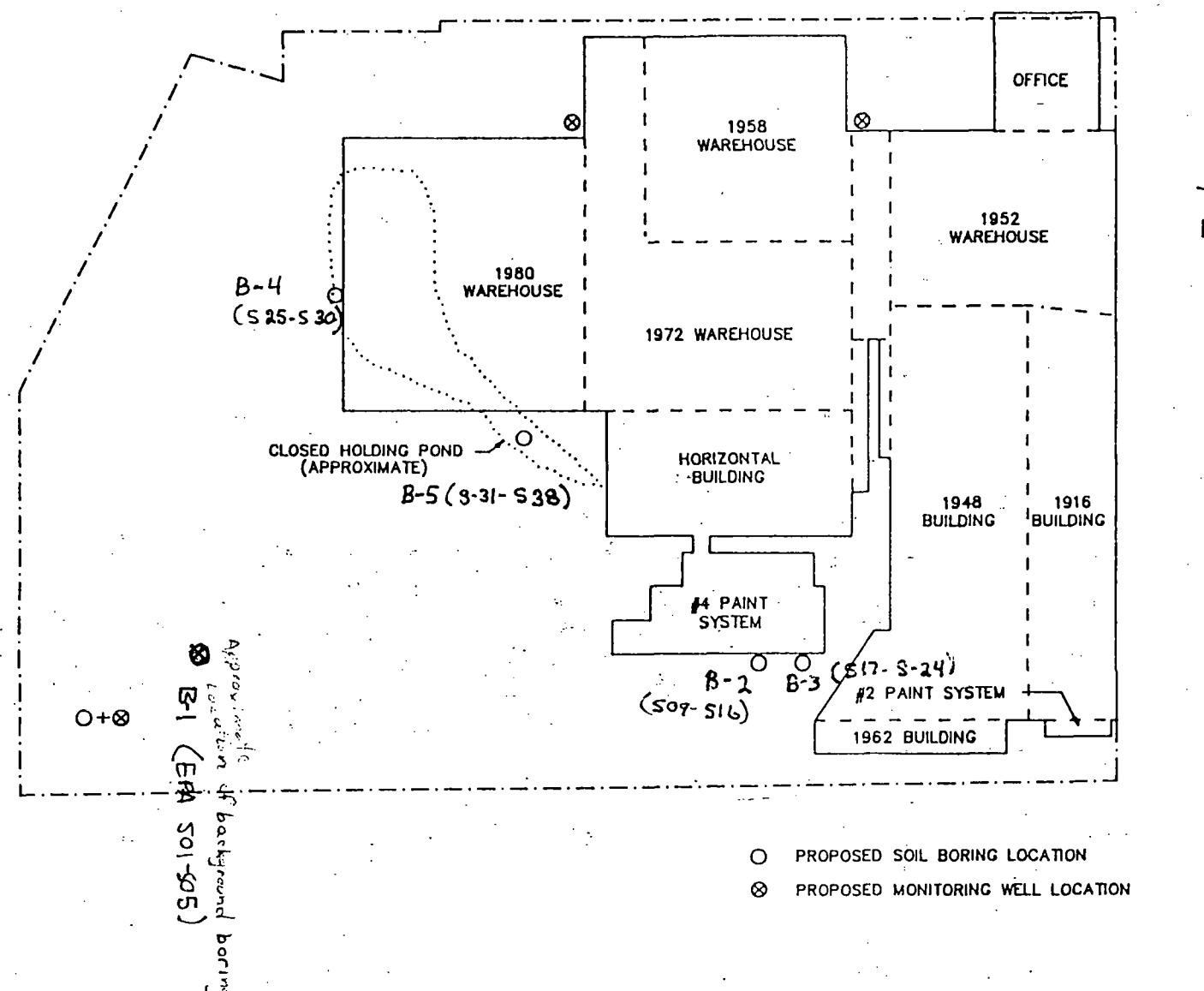
The following project schedule is proposed:

| <u>Task</u> | <u>Schedule</u> |
|----------------------------------------------------------------|------------------------|
| Submit work plan to regulatory agencies for review and comment | Week of April 24, 1989 |
| Receive regulatory approvals | Week of May 15, 1989 |
| Commence field work | Week of June 5, 1989 |
| Complete field work | Week of June 19, 1989 |
| Provide final report | Week of July 3, 1989 |

FIGURE 1
WCI FREEZER DIVISION
SOIL BORING AND WELL LOCATIONS

PACE Laboratories, Inc.

April 21, 1989



**INSTRUCTION MANUAL
TRACE GAS ANALYZER
HNU MODEL ISPI-101**

HNU Systems, Inc.
160 Charlemont Street
Newton, MA 02161-9987
(617)964-6690

January 1987

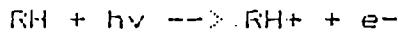
SECTION 1
GENERAL INFORMATION

1.1 INTRODUCTION

This manual describes the operation, maintenance and parts list for the Trace Gas Analyzer, Model ISPI 101, HNU Systems Inc.

1.2 EQUIPMENT DESCRIPTION

The Trace Gas Analyzer (see Figure 1-1), is a portable instrument used to detect, measure, and provide a direct reading of the concentration of a variety of trace gases in many industrial or plant atmospheres. The analyzer employs the principle of photoionization. This process involves the absorption of ultra-violet light (a photon) by a gas molecule leading to ionization:



in which

RH = Trace gas

$h\nu$ = Photon with an energy level equal to or greater than the ionization potential of RH.

The sensor consists of a sealed ultraviolet (UV) light source that emits photons with an energy level high enough to ionize many trace species, particularly organics, but not high enough to ionize the major components of air, O₂, N₂, CO, CO₂ or H₂O.

A chamber exposed to the light source contains a pair of electrodes: one a bias electrode and the second a collector electrode. When a positive potential is applied to the bias electrode a field is created in the chamber. Ions formed by the absorption of photons are driven to the collector electrode. The current produced is then measured, and the corresponding concentration is displayed on a meter directly in parts per million (ppm).

To minimize absorption or decomposition of sample gases, a rapid flow of sample gas is maintained through the ion chamber, which is small, made of inert material and located at the sampling point.

The analyzer consists of a probe, a readout assembly, and a battery charger. The probe contains the sensing and amplifying circuitry; the readout assembly contains the meter, controls, power supply and rechargeable battery. The analyzer will operate from the battery for approximately 6 hours.

Response for the Various Ultraviolet Lamps

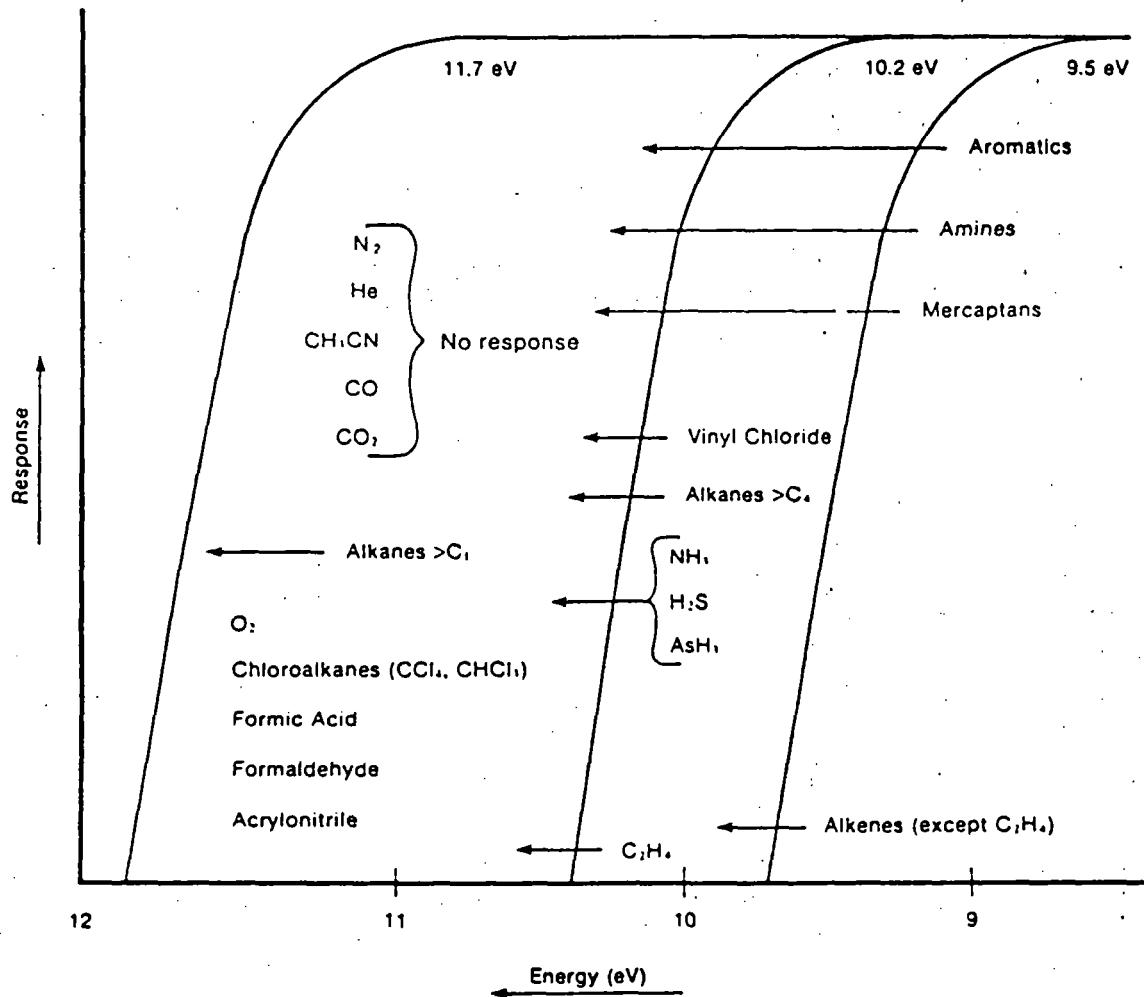


FIGURE 1-2
RESPONSE TO VARIOUS COMPOUNDS
FOR EACH ULTRAVIOLET LAMP

TABLE 1-1
SPECIFICATION DATA

DESIGN FEATURES

| | |
|----------------|---------------------------------------------------------------|
| Range settings | 0 to 20, 200, 2000 ppm (other ranges available on request) |
| Lamp rating | 10.2 eV standard, 9.5 or 11.7 eV optional |

CHARACTERISTICS (see NOTE)

| | |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Detection Range * | 0.1 to 2000 ppm (parts per million by volume) |
| Minimum Detection Level * | 0.1 ppm |
| Maximum Sensitivity * | 0 to 20 ppm FSD at SPAN = 9.8 (full scale deflection) 0 to 2 ppm FSD at SPAN = 0.0 |
| Repeatability * | +/- 1% of FSD |
| Linear Range * | 0.1 to 400 ppm |
| Useful Range * | 0.1 to 2000 ppm |
| Response Time | Less than 3 seconds to 90% of FSD |
| Ambient Humidity (10.2 and 9.5 eV lamps) | up to 90% RH (relative humidity) |
| Operating Temperature, Ambient (10.2 and 9.5 eV lamps) | -10 to 40 degrees C. 14 to 104°F |
| Operating Time on Battery, continuous use | Approximately 6 hours; at lower temperature, use time is reduced due to the effect of cold on the battery. |

TABLE 1-1 cont.

| | |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recharge time from full discharge | Full recharge: 12 to 14 hours. Unit can be left on the charger and be continuously recharged whenever the unit is not in use (the analyzer will not operate while the unit is on the charger: an Intrinsically Safe feature). |
| Recharge current | Max 0.4 amps at 15 V DC |
| Battery Charger Power | 120 V AC, single phase, 50-60 Hz 1.5 Amps 230 V AC, single phase, 50-60 Hz 0.75 Amps |

NOTE: * When equipped with 10.2 eV Probe with SPAN set at 9.8 and measuring benzene. Values will vary for other compounds and conditions.

SECTION 3.2, ANALYZED GAS CYLINDER cont.

One method of sampling the calibration gas is illustrated in Figure 3-1. Connect the cylinder to one leg of the tee, a flow meter to the opposite leg, and the probe to the third leg. The flow meter does not require a valve. If there is a valve, it must be left wide open. The flowmeter is only to indicate excess flow. Adjust the flow from the regulator such that only a little excess flow is registered at the flowmeter. This insures that the ISPI 101 sees the calibration gas at atmospheric pressure and ambient temperature. This calibration procedure applies only to calibration with a high pressure cylinder (with regulator).

A second method of calibration uses HNU Calibration Gas with the regulator at a preset flow (250 ml/min), and only a butt connection between the regulator and the probe extension is required (see Figure 3.2).

- d. Usage - Generally, a gas cylinder should not be used below 200-300 psi as pressure effects could cause concentration variations. The cylinder should not be used past the recommended age of the contents as indicated by the manufacturer. In case of difficulty, verify the contents and concentration of the gas cylinder.
- e. Safety - Isobutylene is nontoxic and safe to use in confined areas. There are no listed exposure levels at any concentration. For more details see Sections 3.5 and 3.2.
- f. Alternate means of calibration are possible. For more information, contact HNU Systems, Inc.

3.3 PROBE

- a. Identify the lamp by the probe label. If a question exists, disassemble the probe and inspect the lamp. The energy of the lamp is etched into the glass envelope. If the lamp appears to need cleaning, see Section 5.2, UV Lamp and Ion Chamber Cleaning.

CAUTION

The 11.7 eV lamp has NO special cleaning compound, unlike the 9.5 and the 10.2 eV lamps, which do. Do NOT use that compound with the 11.7 eV lamp; it will damage the crystal window and void the warranty. Do

SECTION 3.3, PROBE cont.

DO NOT use water or any other water soluble cleaning compound with the 11.7 ev lamp. Do not interchange ion chambers, amplifier boards or lamps between probes. (See Section 5.2 for lamp cleaning instructions).

- b. Connect the probe to the readout assembly.
- c. Set the SPAN pot to the proper value for the probe being calibrated. Refer to the calibration memo accompanying the probe.
- d. Check the Ionization Potential (IP) of the calibration gas to be used. The IP of the calibration gas must be at or below the IP of the lamp.
- e. Proceed with the calibration as described in Section 3.4. Check the calibration memo for specific data. If any questions develop, call an HNU representative.

3.4 PROCEDURE

- a. Battery check - With the probe attached, turn the function switch to BATT. The needle should be in the green region. If not, recharge the battery.
- b. Zero set - With the probe attached, turn the function switch to STANDBY. In this position the lamp is OFF and no signal is generated. Set the zero point with the ZERO set control. The zero can also be set with the function switch on the $\times 1$ position and using a "Hydrocarbon-free" air (check the gas manufacturer's specifications; some products contain some nitrogen carbide (NC)). In this case negative readings are possible if the analyzer measures a cleaner sample when in service.
- c. 0-20 or 0-200 range - For calibrating on the 0-20 or 0-200 range only one gas standard is required. Turn the function switch to the range position and note the meter reading. Adjust the SPAN control setting as required to read the ppm concentration of the standard. Recheck the zero setting (step b.). If readjustment is needed, repeat step c. This gives a two-point calibration; zero and the gas standard point. Additional calibration points can be generated by dilution of the standard with zero air if desired (see Section 8).
- d. 0-2000 range - For calibrating on the 0-2000 range, use of two standards is recommended as cited in Section 3.2a. First calibrate with the higher standard using the SPAN control for setting. Then calibrate with the lower standard using the ZERO adjustment. Repeat these several times to ensure that a good calibration

SECTION 3.4, PROCEDURE cont.

is obtained. The analyzer will be approximately linear to better than 600 ppm (see Figure 3-2). If the analyzer is to be used subsequently on the 0-20 or 0-200 range, it must be recalibrated as described in steps b. and c. above.

- e. Lamp cleaning - If the span setting resulting from calibration is 0.0 or if calibration cannot be achieved, then the lamp must be cleaned (see Section 5.2).
- f. Lamp replacement - If the lamp output is too low or if the lamp has failed, it must be replaced (see Section 5.3).

3.5. CALIBRATION CHECKING

Rapid calibration checking in the field can be accomplished by use of a small disposable cylinder containing isobutylene. Immediately after a calibration has been completed, a reading is taken on a special isobutylene standard. This provides a reference concentration measurement for later checking in the field. This can be done at any time with a portable cylinder containing this same special standard, using this reference reading as a check, and making adjustments to the analyzer if necessary. In effect, this is an indirect method of checking calibration, one maintaining the calibration to give direct readings for the original gas mixture, but using the portable isobutylene cylinder. Details are given in Section 3.2 of the Appendix.

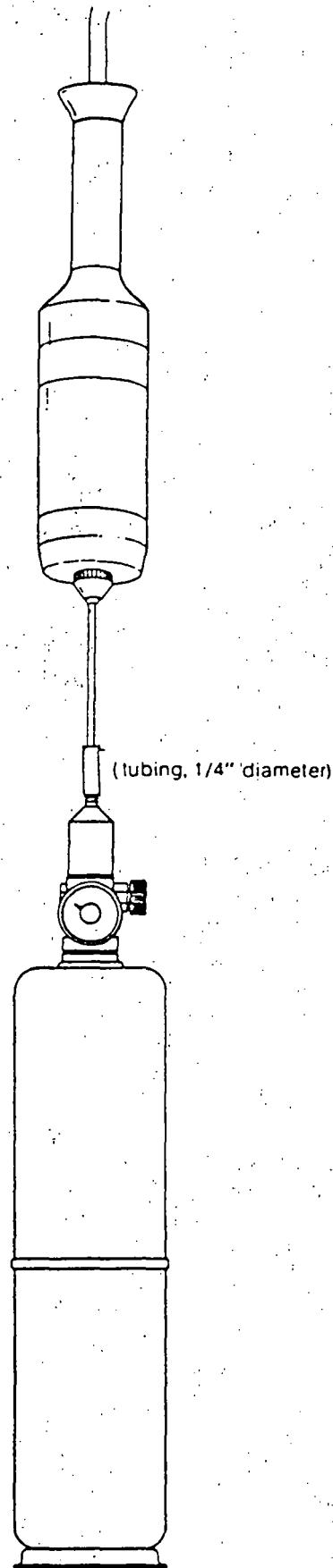


FIGURE 3-2
PRESET FLOW CALIBRATION SET UP

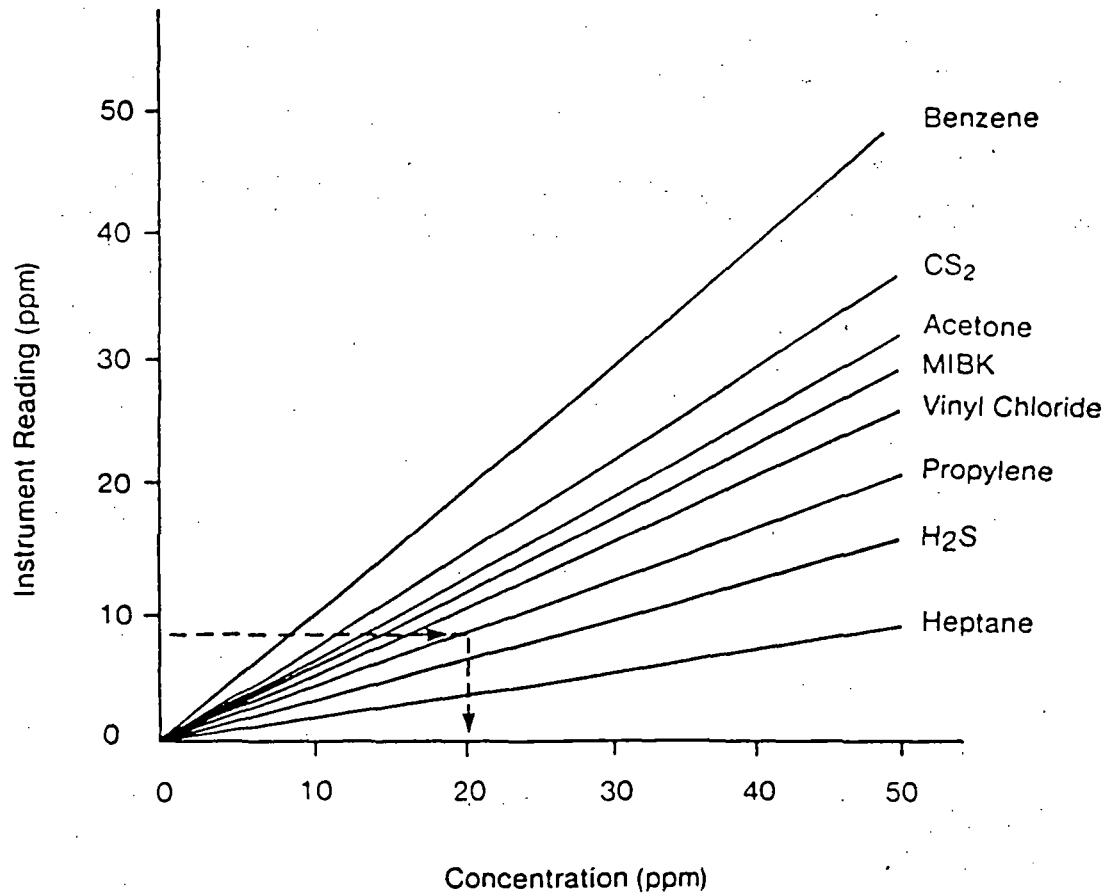


FIGURE 8-2
TYPICAL OUTPUT CURVES -
ANALYZER WITH 10.2 eV LAMP
CALIBRATED FOR BENZENE

TABLE 8-14

RELATIVE PHOTOIONIZATION SENSITIVITIES OF
VARIOUS GASES TO A 10.2 eV LAMP²

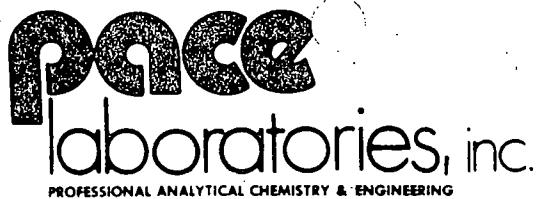
| Gas | Photoionization Sensitivity (see Note 1) | Span Control Setting for Direct reading (approximate) |
|------------------------|---------------------------------------------|-------------------------------------------------------------|
| p-xylene | 11.4 | |
| m-xylene | 11.2 | |
| benzene | 10.0 (reference standard) | 9.8 |
| toluene | 10.0 | |
| diethyl sulfide | 10.0 | |
| diethyl amine | 9.9 | |
| styrene | 9.7 | |
| trichloroethylene | 8.9 | 8.2 |
| carbon disulfide | 7.1 | |
| isobutylene | 5.5 | |
| acetone | 6.3 | |
| tetrahydrofuran | 6.0 | 5.5 |
| methyl ethyl ketone | 5.7 | |
| methyl isobutyl ketone | 5.7 | |
| cyclohexanone | 5.1 | |
| naptha (85% aromatics) | 5.0 | |
| vinyl chloride | 5.0 | 4.3 |
| methyl isocyanate | 4.5 | |
| iodine | 4.5 | |
| methyl mercaptan | 4.3 | |

TABLE 8-14 cont.

| | | |
|-------------------------------------|-----|-----|
| dimethyl sulfide | 4.3 | |
| allyl alcohol | 4.2 | |
| propylene | 4.0 | 3.5 |
| mineral spirits | 4.0 | |
| 2, 3-dichloropropene | 4.0 | |
| cyclohexene | 3.4 | |
| crotonaldehyde | 3.1 | |
| acrolein | 3.1 | |
| methyl methacrylate | 3.0 | 2.4 |
| pyridine | 3.0 | |
| hydrogen sulfide | 2.8 | |
| ethylene dibromide | 2.7 | 1.7 |
| n-octane | 2.5 | |
| acetaldehyde oxime | 2.3 | |
| hexane | 2.2 | |
| phosphine | 2.0 | |
| heptane | 1.7 | |
| allyl chloride (3-chloropropene) | 1.5 | |
| ethylene | 1.0 | |
| isopropanol | 1.0 | 0.1 |
| ethylene oxide | 1.0 | |
| acetic anhydride | 1.0 | |
| alpha pinene | 0.7 | |
| dibromochloropropane | 0.7 | |

| | |
|------------------|------|
| epichlorohydrin | 0.7 |
| nitric oxide | 0.6 |
| beta pinene | 0.5 |
| citral | 0.5 |
| ammonia | 0.3 |
| acetic acid | 0.1 |
| nitrogen dioxide | 0.02 |
| methane | 0.0 |
| acetylene | 0.0 |

NOTE 1: PPM reading when measuring 10.0 ppm of particular gas with monitor calibrated for benzene.



Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa

1710 Douglas Drive North □ Minneapolis, MN 55422 □ Phone (612) 544-5543 □ FAX (612) 544-3974

May 17, 1989

Mr. Kevin Veach
Permit and Review Unit
Hazardous Waste Section
Minnesota Pollution Control Agency
520 Lafayette Road
St. Paul, MN 55155

Mr. Allen Debus
U.S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, IL 60604

Re: Proposed Sampling Work Plan; Addendum #1;
WCI Freezer Division; St. Cloud, Minnesota

Gentlemen:

I am writing to clarify various items discussed during a telephone conversation with Mr. Veach on May 16, 1989.

The items discussed were as follows:

1. You desire confirmation that a three inch split spoon will be used during the soil boring activities. A three inch split spoon will be used.
2. You desire field quality assurance information concerning PACE's standard chain of custody procedures, bottle and bailer preparation procedures and our field filtration procedures. A copy of our Groundwater Monitoring Field Quality Assurance Manual is enclosed for your records.
3. You desire documentation of our laboratory quality assurance procedures. A copy of PACE's current Quality Assurance Plan is enclosed for your records.
4. You desire a description of the steps and timing for well development activities. The wells are scheduled for installation during the first half of the week beginning June 4, 1989. Braun Engineering Testing, Inc. will develop the wells on June 9, 1989 by jetting and pumping as needed to provide nearly sediment-free water. The wells will be allowed to stabilize over the following week and we anticipate sampling the wells on June 19 or 20, 1989.

RECEIVED

MAY 18 1989

MPCA, HAZARDOUS
WASTE DIVISION

Mr. Kevin Veach
Mr. Allen Debus
PACE Project No. 890228.120
May 17, 1989
Page 2

5. You desire clarification that HNU meter screening will be provided on the background soil boring. The samples will be so screened and two samples with the highest readings will be submitted to the laboratory for volatile organic compound (VOC) analyses (EPA SW 846 Method 8240). Soil from samples having lower organic screening concentrations than the two highest readings will, upon request, be properly preserved and made available to the MPCA and/or the U.S. EPA for additional VOC analyses.

Please contact me if you have any questions about the items above.

Sincerely,



Daniel A. Comeau
Environmental Scientist

DAC222/mc

Enclosures

cc: Richard B. Clute, WCI
Dale Stephenson, Esq., Squire,
Sanders & Dempsey

V. SAMPLING VISIT DESCRIPTION

A. Soil Sampling Visit Description

Soil samples were collected from the five locations shown on the site map included in the Pace Laboratories sampling plan in order to determine whether hazardous constituents had been released to the environment from the outdoor storage area or the former wastewater lagoon. Soil sampling for WCI was performed by Pace Laboratories representatives Dan Comeau and Jim Postiglione. Split samples were collected by Kevin Veach, Joe Julik, or Dan Card of the MPCA. The drilling and split spoon equipment was operated by Braun Engineering. Sampling was conducted on June 5, 7 and 8, 1989.

All sample bottles and labels used by the MPCA were provided by the U.S. EPA Contract Laboratory Program (CLP) as well as all paperwork used, including tags, traffic reports, and chain of custody forms. The following samples were sent for analysis by the MPCA staff: 1) five background samples for volatiles and five background samples for Routine Analytical Services metals; 2) five volatiles samples and five RAS metals samples from each of the two borings into the former lagoon area; 3) five volatiles samples from each of the two borings in the outdoor empty container storage area. Sample duplicates and spike samples were collected as required by the CLP. Sample preservation, labeling and shipping was done according to CLP protocol. Samples for organic analysis were sent to Gulf South Environmental Laboratory in New Orleans, Louisiana and samples for inorganic analysis were sent to Keystone Environmental Resources in Monroeville, Pennsylvania. Copies of the field notes, sample tracking forms and the chain of custody forms are included as Appendix 2 to this report.

V. B. Ground Water Sampling Visit Description

This section contains the summary text of the report by Metcalf and Eddy, Inc. on their ground water sampling activities of August 23, 1989. The complete report is included as Appendix 3 to this RFA report.

SECTION 2

SITE CONDITIONS

The WCI Freezer Facility, a division of Franklin Manufacturing Company, is located in St. Cloud, Minnesota. The facility manufactures freezers.

In 1980, a RCRA Part A notification as a hazardous waste facility was submitted and retracted the same year by the owner/operator. The MPCA determined the facility was a hazardous waste storage facility and granted interim status. Currently, there exist active and inactive units on site.

The empty drum storage area is a solid waste management unit (SWMU) where empty drums were stored over an unpaved soil area. Overturned 55-gallon drums and leaking, rusted containers may have released hazardous constituents. The former wastewater lagoon was operated from 1965-1979. This lagoon accepted waste bonderite, a "soapy" degreasing material, and chromium-containing washwater from paint spray booths. The lagoon was closed in 1979.

Two monitoring wells were installed downgradient of the wastewater lagoon. The third well (upgradient) was constructed in an open field on the SW corner of the site. The wells were installed to determine whether hazardous constituents have been released to the groundwater.

During the sampling visit, temperatures were in the mid-to-high 80's, with clear skies and light to moderate east winds.

SECTION 3
SUMMARY OF SAMPLING VISIT

3.1 Summary of Samples Collected

Sampling activities at the WCI site commenced at 0930 on August 23, 1989. A total of 5 groundwater samples were collected, consistent with the amount specified in the EPA sampling plan. None of the groundwater samples collected exhibited unusual odor or discoloration, however, they were quite silty, especially S01 and S03. Analysis requested for all samples was volatile organic analysis and total metals.

All sample bottles and labels were provided by the U.S. EPA Contract Laboratory Program (CLP) as well as all paperwork used, including tags, traffic reports, and chain of custody forms. Latex disposable gloves were used and deemed to be non-hazardous and were disposed of off-site in plastic garbage bags, along with some nalgene filters and other paper products.

Prior to sample collection, water levels were measured and the volume of water in each well was calculated. Three times this volume was removed from each well and placed in 55-gallon drums. Three water samples, S01, S02, and S03, came from monitoring wells one, two, and three, respectively. Sample S04 was a duplicate of S03 and sample S05 was a field blank. For a more detailed explanation of actual sampling locations, see Figure 1.

Sampling was conducted with dedicated bailers by Terry Borgering from Pace Laboratories. He then split the samples with M&E representative Ken Krueger.

Metal samples for S01 and S02 were filtered by Mr. Borgering with a master flex pump. Mr. Borgering filter did not operate properly after he filtered his sample from S03. Consequently Ken Krueger used M&E's Nalgene filter for samples S03 and S04.

3.2 Conclusions

The sampling visit was completed at 1330 hours. The samples were carefully packed in a total of two coolers. All appropriate CLP documentation was enclosed, and custody seals placed on the outside. The coolers were shipped via Federal Express on August 23, 1989 at approximately 1700 hours. The SMO was notified the next day. The organics (one cooler) were shipped

to Gulf South in New Orleans, LA (Attn: Cindy Palazzo) and the inorganics (one cooler) to Skinner and Sherman, Inc. in Waltham, MA (Attn: Marilyn Fonseca).

VI. A. SOIL SAMPLING RESULTS

VI. B. GROUND WATER SAMPLING RESULTS

VII. CONCLUSIONS

A. Soil

Among the volatile organic compounds methylene chloride, acetone, and 2-butenone were found at low levels (usually below the quantification limits) in most of the soil samples. Since these compounds were also found at the same levels in the background samples and the levels were consistent from sample to sample it is reasonable to assume that the detections were due to laboratory contamination. The highest level quantified was 37 ug/kg of 2-butenone in sample EEB 51. This level is not environmentally significant. Therefore, no further investigation is necessary at this time for soil volatiles.

Analysis for Routine Analytical Services inorganics showed that concentrations of Extraction Procedure (EP) toxic metals in the soil samples were not above site background levels or above naturally occurring levels. No further investigation is necessary at this time for these compounds.

B. Ground Water

Methylene chloride was quantified in the upgradient well at 6 ug/l and was detected in the method blanks. The conclusion of the EPA regional laboratory is that this is attributable to laboratory contamination. No other volatile compounds were detected in the ground water samples.

Arsenic was quantified at 11.8 ug/l in well 2 and found below the detection limit of 8.3 ug/l in well 3. These levels are well below the drinking water standard of 50 ug/l. Arsenic has not been associated with any of the hazardous waste activities at the site. No other EP toxic metal was detected in any of the wells. It is concluded that no further investigation is necessary at this time for volatiles or inorganics in the ground water.

Appendix 1
MPCA Sampling Plan

SAMPLING PLAN WCI FREEZER DIVISION - ST. CLOUD MINNESOTA

SAMPLING - OBJECTIVE:

In October 1986 a Visual Site Inspection (VSI) was conducted at the WCI facility in St. Cloud as part of the RCRA Facility Assessment (RFA) of the site. The RFA report concluded that two solid waste management units merited further investigation to determine whether releases of hazardous constituents had contaminated soil or groundwater. These two areas are the empty container storage area south of the paint building and the former wastewater lagoon on the west side of the WCI property. Soil samples will be taken at both of these units and monitoring wells will be installed and groundwater samples taken near the former lagoon. One boring will be placed on an uncontaminated part of the site and used to determine background levels of toxic metals.

EMPTY CONTAINER STORAGE AREA:

Site Description: The empty drum storage area extends for about 70 feet outside and along the south wall of the paint system building. Empty 55-gallon drums are stored here prior to shipment back to the chemical supplier. The drums have been stored on their sides on the open ground with no container system. If there have been releases of drum residues the potential exists for soil and groundwater contamination.

Sampling locations: Two soil borings will be made equidistant from the ends of the storage area. The exact boring locations will be determined in the field.

Sampling Methods: Soil sampling will be done in accordance with ASTM: D 1586-84, using a 3 inch I.D. split spoon sampler driven into the soil with a 140 lb. weight falling 30 inches. Borings will be drilled to a depth of 20 feet. The soil shall be classified according to ASTM: D2488. Soil boring logs shall be completed which indicate the depth and classification of the soil strata, the N value of the soil, water level in the bore hole, the results of the head space analysis, and other relevant information regarding the boring or classification process. Samples shall be collected at 2 1/2 foot intervals with one portion placed in a container for laboratory possible analysis and another portion placed in a container for field evaluation by the headspace method.

Analysis Parameters: A field evaluation of soils will be done for volatile organics using the head space analysis. Samples of soils will be collected every 2 1/2 feet and approximately 100 grams of soil will be sealed in 12 ounce jars, sealed with Saran wrap or teflon, allowing adequate air space for collection of volatiles. The soil will be broken up and the sample placed in a warm location for several minutes. A field air-monitoring instrument such as an HNU or an OVA shall be used to detect the presence of volatile organics in each sample. Based on the results of the head space analysis, 5 samples from each boring shall be selected for laboratory analysis. The samples will undergo extraction and laboratory analysis for volatile organics in each sample. Based on the results of the head space analysis, 5 samples from each boring shall be selected for laboratory analysis. The samples will undergo extraction and laboratory analysis for volatile organic compounds (VOCs) according to EPA SW 846 methods.

Former Wastewater Lagoon:

Site Description: The unlined lagoon was on the west side of the WCI property and operated from 1965 to 1979. This lagoon received wastewaters from the #4 paint line and discharge from the Bonderite system. Until 1980 WCI used a lead/chromium based paint and the wastewaters would have contained these contaminants. Various solvents associated with the Bonderite and painting systems would have also been released to the wastewater lagoon. The lagoon bottoms showed contamination with chromium up to 18000 ppm and although some soil was removed it is not known what level of chromium or lead remained in the soil. Because the lagoon was unlined it is likely that the near surface groundwater was contaminated. A warehouse was built over the lagoon site in 1979.

Soil Borings: Four soil borings shall be made around the location of the former lagoon. Two of these borings shall be located on the south side and two shall be located on the west side of the new warehouse addition. The sample shall be collected and analyzed according to the procedures described for the borings in the empty container area with the following exception: each of three of the borings shall also have five (5) samples analyzed for Routine Analytical Services (RAS) total metals. The five samples to be analyzed in each boring shall be selected (based on visual evaluation) from depths below the bottom of the former lagoon.

Monitoring Wells, Purposes and Location: Three groundwater monitoring wells shall be installed around the former lagoon. The purpose for the monitoring wells will be twofold. The wells are to function as detection monitoring wells, primarily to detect the presence of toxic metals, xylene, toluene and methyl ethyl ketone which are the main contaminants which may possibly exist at this site. As two of these suspected contaminants are less dense than water and since the wells will also serve to confirm the direction of the horizontal component of ground water flow, the wells will be installed to intersect the water table.

The attached map has the location of the proposed monitoring wells and also the four (4) borings which are to be installed as part of this investigation, see figure 1.

Groundwater Analysis Parameters: The groundwater samples shall be analyzed for VOCs and RAS total metals according to the procedures in EPA SW 846.

Groundwater Collection Procedures: The samples will be collected by MPCA personnel two weeks after well installation and development. Water table levels will be measured in each well prior to well sampling. Three well volumes of water will be purged from each well and the parameters of temperature, pH, and conductivity will be allowed to stabilize prior to sampling. Well purging and sample collection will be done with a stainless steel or Teflon bailer which is dedicated to that particular well. The bailers and sample containers will be provided and cleaned according to standard procedures by the Minnesota Department of Health and will meet the requirements of the Region V approved QAPP.

Monitoring Well Construction

The three monitoring wells are to be installed with hollow stem augers, with a minimum inside diameter (I.D.), at least 4.25 preferably 6 1/4 inches. The wells will be constructed with 2.0 inch nominal diameter (N.D.) Type 304 stainless steel screens and riser pipes. The screens will have a number 10 slot and an appropriately sized filter pack extending two feet above the screen. The well screens will be ten feet long. The uppermost 2 feet will be above the water table.

6 inches of very fine "flour sand" shall be placed above the filter pack. Above this two (2) feet of 100% bentonite pellets shall be placed, wetted, and allowed to hydrate 30 minutes before continuing the installation. (6) inches of very fine sand shall be placed above the bentonite seal and the remainder of the annulus shall be filled with a cement bentonite grout to within three (3) feet of the surface. From three (3) feet below grade to approximately six (6) inches above grade a concrete anchor shall be installed. Set into this concrete anchor shall be a four (4) inch diameter protective casing fitted with a locking cap. The top of the protective casing shall extend approximately one (1) inch above the vented cap of the monitoring well riser pipe. All monitoring well installations must be done in accordance with the Minnesota Dept. of Health's Water Well Construction Code (MN Rule 4735). This may involve the installation of protective posts around the monitoring wells. See figure 2 for a schematic of the well design criteria.

Background Soil Boring

One soil boring shall be taken to a 20 foot depth and sampled as described in the empty container section above. This boring shall be placed in a part of the facility which is presumably uncontaminated by releases of hazardous constituents and will indicate background levels of metals in the soils at the WCI facility. The final location will be selected in the field. Five samples shall be taken at depths which correspond to the depths sampled in the soil borings around the former lagoon and analysed for RAS total metals.

Field Control Samples:

An appropriate number of field blanks will be collected for water samples. One organic sample (specific location to be selected on site) will be collected to be used by the laboratory for a matrix spike and matrix spike duplicate.

Sample Containers:

The sample quantities, preservatives, bottle sizes and types to be used are those designated in the CLP SLOW for routine analytical services. The sample size, container type, preservation methods and holding times are also in Appendix B of the RFA QAPP. Contractor will provide all aforementioned sampling equipment. Sampling jars should be prepared using procedures listed in the Region V approved QAPP, Contractor will provide all aforementioned sampling equipment. Sampling jars should be prepared using procedures listed in the Region V approved QAPP, or if not specified: clean with nonphosphate detergent in tap water; 1:1 nitric acid rinse; 1:1 hydrochloric acid rinse; tap water rinse; and distilled water rinse.

Decontamination of Equipment:

A protocol for decontamination procedures is to be established by the contractor and referenced or added as an attachment.

Recordkeeping:

The location from which each sample is taken will be recorded in the field logbook. Photographs will be used to document sampling sites and to verify written description entered in the field log, including static water depths borehole volumes, soil descriptions, and pertinent colors or odors. Field tracking records, sample analysis request sheets and chain of custody forms will be prepared as described in the RCRA QAPP. All photographs, forms, data, and other project documentation will be placed in the project file and will be submitted to Ms. Pat Vogtman.

Soil Sampling:

A drilling rig will be used to place soil borings and wells. The contractor will bring equipment to penetrate rock and asphalt pavement, in case it is necessary to collect samples from beneath paved areas. Provisions for taking angled borings shall also be made. Between borings, augers are to be decontaminated by procedures suggested in the Region V QAPP. All prospective sampling locations are to be first inspected, to ascertain that natural soil will be sampled. Samples are to be placed in appropriate containers, as mentioned previously and below, as soon as possible after their extraction, and the caps must be securely fastened. Lids are to be taped carefully, and permanent ink is to be used for labels, dates, and the collectors initials. Labeling is to be done at the time of sample collection. Samples are to be packed and stored according to the approved Region V QAPP.

SAMPLING PLAN WCI FREEZER DIVISION - ST. CLOUD MINNESOTA

SAMPLING - OBJECTIVE:

In October 1986 a Visual Site Inspection (VSI) was conducted at the WCI facility in St. Cloud as part of the RCRA Facility Assessment (RFA) of the site. The RFA report concluded that two solid waste management units merited further investigation to determine whether releases of hazardous constituents had contaminated soil or groundwater. These two areas are the empty container storage area south of the paint building and the former wastewater lagoon on the west side of the WCI property. Soil samples will be taken at both of these units and monitoring wells will be installed and groundwater samples taken near the former lagoon. One boring will be placed on an uncontaminated part of the site and used to determine background levels of toxic metals.

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6 inches of very fine "flour sand" shall be placed above the filter pack. Above this two (2) feet of 100% bentonite pellets shall be placed, wetted, and allowed to hydrate 30 minutes before continuing the installation. (6) inches of very fine sand shall be placed above the bentonite seal and the remainder of the annulus shall be filled with a cement bentonite grout to within three (3) feet of the surface. From three (3) feet below grade to approximately six (6) inches above grade a concrete anchor shall be installed. Set into this concrete anchor shall be a four (4) inch diameter protective casing fitted with a locking cap. The top of the protective casing shall extend approximately one (1) inch above the vented cap of the monitoring well riser pipe. All monitoring well installations must be done in accordance with the Minnesota Dept. of Health's Water Well Construction Code (MN Rule 4735). This may involve the installation of protective posts around the monitoring wells. See figure 2 for a schematic of the well design criteria.

Background Soil Boring

One soil boring shall be taken to a 20 foot depth and sampled as described in the empty container section above. This boring shall be placed in a part of the facility which is presumably uncontaminated by releases of hazardous constituents and will indicate background levels of metals in the soils at the WCI facility. The final location will be selected in the field. Five samples shall be taken at depths which correspond to the depths sampled in the soil borings around the former lagoon and analysed for RAS total metals.

Field Control Samples:

An appropriate number of field blanks will be collected for water samples. One organic sample (specific location to be selected on site) will be collected to be used by the laboratory for a matrix spike and matrix spike duplicate.

Sample Containers:

The sample quantities, preservatives, bottle sizes and types to be used are those designated in the CLP SLOW for routine analytical services. The sample size, container type, preservation methods and holding times are also in Appendix B of the RFA QAPP. Contractor will provide all aforementioned sampling equipment. Sampling jars should be prepared using procedures listed in the Region V approved QAPP, Contractor will provide all aforementioned sampling equipment. Sampling jars should be prepared using procedures listed in the Region V approved QAPP, or if not specified: clean with nonphosphate detergent in tap water; 1:1 nitric acid rinse; 1:1 hydrochloric acid rinse; tap water rinse; and distilled water rinse.

Decontamination of Equipment:

A protocol for decontamination procedures is to be established by the contractor and referenced or added as an attachment.

Recordkeeping:

The location from which each sample is taken will be recorded in the field logbook. Photographs will be used to document sampling sites and to verify written description entered in the field log, including static water depths borehole volumes, soil descriptions, and pertinent colors or odors. Field tracking records, sample analysis request sheets and chain of custody forms will be prepared as described in the RCRA QAPP. All photographs, forms, data, and other project documentation will be placed in the project file and will be submitted to Ms. Pat Vogtman.

Soil Sampling:

A drilling rig will be used to place soil borings and wells. The contractor will bring equipment to penetrate rock and asphalt pavement, in case it is necessary to collect samples from beneath paved areas. Provisions for taking angled borings shall also be made. Between borings, augers are to be decontaminated by procedures suggested in the Region V QAPP. All prospective sampling locations are to be first inspected, to ascertain that natural soil will be sampled. Samples are to be placed in appropriate containers, as mentioned previously and below, as soon as possible after their extraction, and the caps must be securely fastened. Lids are to be taped carefully, and permanent ink is to be used for labels, dates, and the collectors initials. Labeling is to be done at the time of sample collection. Samples are to be packed and stored according to the approved Region V QAPP.

Appendix 2
Soil Sampling Field Notes and Chain of Custody

WCI Freezer Division ①

RFA Sampling 6/5/89

Field Notes Soil Sampling

MPCA representatives

Kevin Veach

Joe Julik

WCI rep.: Dick Clute

Pace reps.: Dan Comeau

Jim Postiglione

Braun reps:

Weather: light clouds

winds: westerly 8-15 mph

temp. 24 °C

Boring B-1 background location

location: 109 ft west of chain link fence

117' north of ~~west~~^{center} of street light base

time 10:22

SO1 $1\frac{1}{2}$ -3 black organic to brown sandy (SM) (2)

SO2 $4\frac{1}{2}$ - $5\frac{1}{2}$ brown sandy little sample due to cobble 1039

* SO3 $6\frac{1}{2}$ -8 brown sand to moist clean coarse sand in last 2' time 1048

* SO4 9-10 $\frac{1}{2}$ mixed sand and cobbles saturated 1100

SO5 $11\frac{1}{2}$ -13 well-graded saturated sand and gravel. 1124. decided to omit HNu

HNU on $1\frac{1}{2}$ -3 24 ppm. Pace instrument

SO6

* 14-15 $\frac{1}{2}$ 1137 brown well graded sand, saturated

Decision made to allow natural sand pack

SO7

16 $\frac{1}{2}$ -18 1147 brown, graded, saturated coarse sand with gravel

SO8

* 19-20 $\frac{1}{2}$ 1202 brown, well graded saturated sand

| <u>HN u</u> | (3) |
|------------------------|---------------|
| 4' - 5½' | 10.2 |
| 6½' - 8' | 17.6 |
| 14½' - 15½' | 22 |
| 16½' - 18' | 24 |
| 19 - 20 | 160 |

Chose location for B-5 170' west
 Southeast of edge new warehouse and 8' south
 to roughly correspond to previous
 Braun boring ST 23

B-4
 Location of ~~B-2~~ was 120' south of
 the N.W corner of the new warehouse
 ½ way between ST 13 and ST 14

Verified location of one well
 next to N.E corner of new warehouse

Verified location of the other
 downgradient well and got
 the drilling crew set in that area

(4)

Photos:

8 background boring location

B-1

9 well drilling for upgradient
well

10 completed background well

11 open cooler filled w samples

12 closed front of seal & cooler

13 closed rear seal of cooler

(5)

Sampling Visit 6-7-89

MPCA - Kevin Veal

Dan Card

Pace : Eric Forgaard

Braun : Mark Threlman

Bill Donahue

Time 943

Weather Partly cloudy, 28°C

wind 5-15 mph from west

Photo 14 B-2 location

15 B-2 closeup

location West 1/3 of the empty
container storage area (Pace

Labs location B-4)

(6)

* 509 959 0-1 $\frac{1}{2}$. brown silty sand

* 510 1011 1 $\frac{1}{2}$ -3 mixed sandy fill/silt

511 1026 4-5 $\frac{1}{2}$ sandy fill to sandy
till in last 3"

* 5-12 1045 6 $\frac{1}{2}$ -8 brown sandy till to
light brown sand w/gravel fn last 6"

1050 temp 30°C HNV 1:5-3 reading 0
4-5-5 reading 0

* 5-13 1056 9-10 $\frac{1}{2}$ brown silty-sand
till w/ cobbles

514 1175 split spoon got stock only
advanced 4" 1 VOA container collected
from this increment. ~~readjusted~~
~~with narrower split spoon~~
11 $\frac{1}{2}$ -13 not enough collected so auger
was advanced to 13 ft

13 ft 1175

* 5-15 13-14 $\frac{1}{2}$ 1148 grey till with
cobbles very hard dense

| | | | | |
|------|--------|-------|-------------------------------------------------|-----|
| S-16 | 15½-17 | 12/10 | grey till, hard very little sample collected | (7) |
|------|--------|-------|-------------------------------------------------|-----|

| | | |
|----------------------------------------------------------------------------------|------|--|
| Boring location B-3 (B-5 for Pace) East ½ of the empty container storage area | 1334 | |
|----------------------------------------------------------------------------------|------|--|

| | | |
|--------|---------|-----------------------------------------|
| * S-17 | 12-3-4" | 2' sand w/gravel 2-3 dark silty sand |
|--------|---------|-----------------------------------------|

| | | |
|------|-------|-----------------------------------------------------------------------|
| 5-18 | 13 45 | well sorted sand with SW-SM sandy silt in ^{first} 8" 4-5½ |
|------|-------|-----------------------------------------------------------------------|

| | | |
|--------|------|----------------------------------|
| * S-19 | 1357 | 6½"-8" well sorted sand w gravel |
|--------|------|----------------------------------|

| | | |
|--------|------|----------------|
| * S-20 | 1405 | 9-10½" " " " " |
|--------|------|----------------|

| | | |
|---|------|--------------------------------------------------------------------|
| A | 5-21 | 14 15 11½-13 wellsorted brn. sand to hard silty sand inkst 1 ft |
|---|------|--------------------------------------------------------------------|

| | | |
|--------|-------|-----------------------------|
| * S-22 | 14 30 | 14-15½ hard grey silty sand |
|--------|-------|-----------------------------|

| | | |
|------|-------|----------------------------------------------------------------|
| 5-23 | 14 45 | 16½-18" " " " " no metals sampled; Very little sample avail |
|------|-------|----------------------------------------------------------------|

| | | |
|--------|-------|------------------------------------------------------------------------------------------------|
| * S-24 | 14 58 | 19-20½ hard grey silty sand <u>no metals sampled</u> some sand pocket with green pigment |
|--------|-------|------------------------------------------------------------------------------------------------|

(8)

Quest? How much asphalt was bonded through

How ~~deep~~^{depressed} was the sfc of the asphalt
compared to the 'normal' grnd sfc?

4" bituminous

1' decrease in elevation to sfc at ramp

6/8 Time 9:49 Temp 54°F

overcast light drizzle

wind from North, 0-5 mph

Sampling location B-4 West Side of Wharf

F 5.25 1000 9'-10 $\frac{1}{2}$ '

HNU background ~ 3 $\frac{1}{2}$ due to drilling rig

rezeroed the HNU

mixed sand & silt fill w/ black

crumbly tar-like substance

S-2c 1010 11 $\frac{1}{2}$ -13 mixed fill with
cobbles & stones

(9)

P S27 10:25 14-15 $\frac{1}{2}$ trace
w/ org matter saturated
transition from fill to lagoon
bottom

A S-28 1045 16 $\frac{1}{2}$ -18 well sorted
sand w/ cobbles organic
smell grades to fine sand w/ silt

A S-29 1100 19-20 $\frac{1}{2}$ well sorted
sand w/ cobbles faint org. smell
transition to till in last 4"

A -30 1110 20 $\frac{1}{2}$ -22 hard grey till
silty fine sand

Photo 18 looking east at boring 4

Photo 19 looking north east at " "
and corner of warehouse

Location B5 South of Warehouse in front
of Dock 11

S-31 1330 well sorted sand &
cobbles 6½ - 8

S-32 1340 Br Fr - Co S. w/ Cobble
9 - 10 ½

* S-33 1350 11½ - 13 ban. fine sand
transition to well sorted sand
lagoon bottom in last 11' grey
w/ organic odor

* S-34 1405 14-15½ well sorted grey
sand w/ gravel & cobbles v. little
sample. ~~no~~ metals sampled

* S-35 1415 16½ - 18 well sorted sand
w/ gravel to fine sand w/
trace silt ^{natural} organic odor

* S-36 1430 19-20½ grey fine sand
w/ ^{trace} gravel ^{natural} some organic odor.

111111111111111111

~~S-37~~ 21 $\frac{1}{2}$ -23 1440 well sorted
grey med. sand, with gravel, saturated

(11)

~~S-38~~ 24-25 $\frac{1}{2}$ 1455 well sorted
grey coarse sand, saturated

HNU readings

B-4 9-10.5 0
19-20 $\frac{1}{2}$ 0

B-5 16.5-18 ~~18.5~~ 1
19-20.5 1.5
24-25.5 2.5

MPCA SAMPLE TRACKING FORM

Sheet 1 of 2

Site Name WCI Freezer Division
Date 6/5/89
Project Manager Kevin Deach
Technical Assistant Tee Jukk
Sample Coordinator

SAS Laboratory: _____
Organic Contract Laboratory: Gulf South
Inorganic Contract Laboratory: Keystone Env. Res.
Shipping Date: 6-5-87
Custody Seals: 9652L 96527

| Sample Number | Sample Location | Sample Matrix | Time | Date | Designate | Traffic Report Number | CRL Log Number | EPA Tag Number | EPA Bottle Number |
|---------------|-----------------------------------|---------------|-------|------|-----------|----------------------------|----------------|----------------|-------------------|
| S01 | B-1 $\frac{1}{3}$ | soil | 10:25 | 6/5 | metals | MEEZ00 | 89YV01 | 035690 | |
| S01 | B-1 $\frac{1}{3}$ | soil | 10:25 | 6/5 | VOA | EEB37 MEEZ01 | 89YV01 | 035491 | |
| S01 | B-1 $\frac{1}{3}$ -3 | soil | 10:28 | 6/5 | VOA | EEB37 | " | 035492 | |
| S02 | B-1 $\frac{4}{3}$ - $\frac{5}{2}$ | soil | 1039 | 6/5 | metals | MEEZ01 | " | 035493 | |
| S02 | B-1 $\frac{4}{3}$ - $\frac{5}{2}$ | " | 1039 | 6/5 | VOA | EEB38 | " | 035494 | |
| S02 | B-1 $\frac{4}{3}$ - $\frac{5}{2}$ | " | 1039 | 6/5 | VOA | EEB38 | " | 035495 | |
| S03 | B-1 $6\frac{1}{2}$ -8 | " | 1048 | 6/5 | metals | MEEZ02 | " | 035496 | |
| S03 | B-1 $6\frac{1}{2}$ -8 | " | 1048 | 6/5 | VOA | EEB39 | " | 035497 | |
| S03 | B-1 $6\frac{1}{2}$ -8 | " | 1048 | 6/5 | VOA | EEB39 | " | 035498 | |
| S04 | B-1 9-10 $\frac{1}{2}$ | " | 1100 | 6/5 | metals | MEEZ03 | " | 035999 | |
| S04 | B-1 9-10 $\frac{1}{2}$ | " | 1100 | 6/5 | VOA | EEB40 | " | 035500 | |
| S04 | B-1 9-10 $\frac{1}{2}$ | " | 1100 | 6/5 | VOA | EEB40 | " | 035501 | |

MPCA SAMPLE TRACKING FORM

Sheet 2 of 2

Site Name _____
Date _____
Project Manager _____
Technical Assistant _____
Sample Coordinator _____

SAS Laboratory: _____
Organic Contract Laboratory: _____
Inorganic Contract Laboratory: _____
Shipping Date: _____
Custody Seals: _____

| Sample Number | Sample Location | Sample Matrix | Time | Date | Designate | Traffic Report Number | CRL Log Number | EPA Tag Number | EPA Bottle Number |
|---------------|-----------------|---------------|------|------|-----------|-----------------------|----------------|----------------|-------------------|
| S05 | B1, 11½-13 | soil | 1124 | 6/5 | metals | MEEZ04 | | 035502 | |
| S05 | B1, 11½-13 | soil | 1124 | 6/5 | VOA | EEB 41 | | 035503 | |
| S05 | B1/11½-13 | " | " | 6/5 | VOA | EEB 41 | | 035504 | |
| S06 | B1/14-15½ | " | 1137 | 6/5 | metals | MEEZ05 | | 035505 | |
| S06 | B1/14-15½ | " | " | " | VOA | EEB 42 | | 035506 | |
| S06 | B1/14-15½ | " | " | " | VOA | EEB 42 | | 035507 | |
| S07 | B1/16½-18 | soil | 1147 | " | metals | MEEZ06 | | 035508 | |
| S07 | B1/16½-18 | " | 1147 | " | VOA | EEB 43 | | 035509 | |
| S07 | B1/16½-18 | " | 1147 | " | VOA | EEB 43 | | 035510 | |
| S08 | B1/19-20 | soil | 1202 | " | metals | MEEZ07 | | 035511 | |
| S08 | B1/19-20 | " | 1202 | " | VOA | EEB 44 | | 035512 | |
| S08 | B1/19-20 | " | 1202 | " | VOA | EEB 44 | | 035513 | |

MPCA SAMPLE TRACKING FORM

Sheet 1 of 4

Site Name WCI Freezer
Date 6/7/89
Project Manager Kevin Voich
Technical Assistant Ian Card
Sample Coordinator

SAS Laboratory:

Organic Contract Laboratory: Gulf South Env'l
Inorganic Contract Laboratory: Keystone Env'l Pa.
Shipping Date: 6/9/89
Custody Seals:

| Sample Number | Sample Location | Sample Matrix | Time | Date | Designate | Traffic Report Number | CRL Log Number | EPA Tag Number | EPA Bottle Number |
|---------------|-----------------|---------------|------|------|-----------|----------------------------|----------------|----------------|-------------------|
| S09 | B20-1½ | soil | 959 | 6/7 | metals | MEEZ08 | 89YV01 | 035514 | F8236104 |
| S09 | B20-1½ | " | 959 | 6/7 | VOA | EEB 45 | | 035515 | D8159184 |
| S09 | B20-1½ | " | 959 | 6/7 | VOA | EEB 45 | | 035516 | D8159184 |
| S10 | B2 1½-3 | soil | 1011 | 6/7 | metals | MEEZ09 | | 035519 | |
| S10 | B2 1½-3 | " | 1011 | | VOA | EEB 46 | | 035518 | |
| S10 | B2 1½-3 | " | 1011 | | VOA | EEB 46 | | 035517 | |
| S11 | B2 4-5½ | soil | 1026 | | metals | MEEZ10 | | 035522 | |
| S11 | B2 4-5½ | " | 1026 | | VOA | EEB 47 | | 035521 | |
| S11 | B2 4-5½ | " | 1026 | | VOA | EEB 47 | | 035520 | |
| S12 | B2 6½/8 | soil | 1045 | | metals | MEEZ 11 | | 035523 | |
| S12 | B2 6½/8 | " | 1045 | | VOA | EEB 48 MEEZ# | | 035524 | |
| S12 | B2 6½/8 | " | 1045 | | VOA | EEB 48 | ↓ | 035525 | |

MPCA SAMPLE TRACKING FORM

Sheet 2 of 4

Site Name WCI Freezer
Date 6/7/89
Project Manager Kevin Deach
Technical Assistant Dan Card
Sample Coordinator

SAS Laboratory:

Organic Contract Laboratory: Gulf South Env'l
Inorganic Contract Laboratory: Keystone Env'l Res
Shipping Date: 6/9/89
Custody Seals:

| Sample Number | Sample Location | Sample Matrix | Time | Date | Designate | Traffic Report Number | CRL Log Number | EPA Tag Number | EPA Bottle Number |
|---------------|-----------------|---------------|------|--------|-----------|------------------------------|----------------|----------------|-------------------|
| S13 | B2 7-10½ | soil | 1056 | 6/7/89 | metals | MEEZ 12 | 89YV01 | 035526 | |
| S13 | B2 7-10½ | | 1056 | 6/7/89 | VOA | EEB 49 | | 035527 | |
| S13 | B2 9-10½ | | 1056 | 6/7/89 | VOA | EEB 49 | | 035528 | |
| S14 | B2 11½-13 | / | 1115 | 6/7/89 | metals | MEEZ 13 | | 035529 | |
| S14 | B2 11½-13 | | 1115 | 6/7/89 | VOA | EEB 50 | | 035530 | |
| S14 | B2 11½-13 | | 1115 | 6/7/89 | VOA | EEB 50 | | 035531 | |
| S15 | B2 13-14½ | | 1148 | 6/7/89 | metals | MEEZ 14 | | 035532 | |
| S15 | B2 13-14½ | | 1148 | 6/7/89 | VOA | EEB 51 | | 035533 | |
| S15 | B2 13-14½ | | 1148 | 6/7/89 | VOA | EEB 51 | | 035534 | |
| S16 | B2 15½-17 | | 1210 | 6/7/89 | metals | MEEZ 15 | | 035535 | |
| S16 | B2 15½-17 | | 1210 | 6/7/89 | VOA | EEB 52 MEEZ 17 | | 035536 | |
| S16 | B2 15½-17 | | 1210 | 6/7/89 | VOA | EEB 52 | | 035537 | |

MPCA SAMPLE TRACKING FORM

Sheet 3 of 4

Site Name WCI Freezer
 Date 6/7/89
 Project Manager Kevin Veach
 Technical Assistant Dan Card
 Sample Coordinator _____

SAS Laboratory:
 Organic Contract Laboratory: Gulf South Env. La
 Inorganic Contract Laboratory: Keystone Env. R
 Shipping Date: 6/9/89
 Custody Seals: _____

| Sample Number | Sample Location | Sample Matrix | Time | Date | Designate | Traffic Report Number | CRL Log Number | EPA Tag Number | EPA Bottle Number |
|---------------|-----------------|---------------|------|------|-----------|-----------------------|----------------|----------------|-------------------|
| S17 | B3 H-3 | soil | 1334 | 6/7 | metal | Meez 16 | 89YVO1 | 035538 | |
| S17 | " " | | 1334 | 6/7 | VOA | EEB 53 | | 035539 | |
| S17 | " " | | 1334 | 6/7 | VOA | EEB 53 | | 035540 | |
| S18 | B3 4-5½ | | 1345 | | metal | Meez 17 | | 035541 | |
| S18 | " " | | 1345 | | VOA | EEB 54 | | 035542 | |
| S18 | " " | | 1345 | | VOA | EEB 54 | | 035543 | |
| *S19 | B-3 6½-8 | | 1357 | | metal | Meez 18 | | 035544 | |
| S19 | " " | | 1357 | | VOA | EEB 55 | | 035545 | |
| S19 | " " | | 1357 | | VOA | EEB 55 | | 035546 | |
| *S20 | B-3 9-10½ | | 1405 | | metal | Meez 19 | | 035547 | |
| *S20 | " " | | 1405 | | VOA | EEB 56 | | 035548 | |
| *S20 | | | 1405 | | VOA | EEB 56 | | 035549 | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

20 50 2256 24.62
 51 52 58
 53
 54
 55

21 53 2359 24.62
 54
 55

MPCA SAMPLE TRACKING FORM

Sheet 4 of 4

Site Name WCI Freezer
Date 6/7/89
Project Manager Kevin Veach
Technical Assistant Dan Card
Sample Coordinator

SAS Laboratory:

Organic Contract Laboratory: Gulf South Env. Lab
Inorganic Contract Laboratory: Kesterson Env. R.
Shipping Date: 6/9/89
Custody Seals:

| Sample Number | Sample Location | Sample Matrix | Time | Date | Designate | Traffic Report Number | CRL Log Number | EPA Tag Number | EPA Bottle Number |
|---------------|-----------------|---------------|------|------|-----------|-----------------------|----------------|----------------|-------------------|
| S21 | B-3 11½-13 | Soil | 1415 | 6-7 | metal | Marz 20 | 89YV01 | 035550 | |
| S21 | " " | | " | | VCA | EEB57 | | 035551 | |
| S21 | " " | | " | | VON | EEB57 | | 035552 | |
| *S22 | B-3 14-15½ | | 1430 | | metal | Marz 21 | | 035553 | |
| *S22 | " " | | " | | VON | EEB58 | | 035554 | |
| *S22 | " " | | " | | VON | EEB58 | | 035555 | |
| S23 | B-3 16½-18 | not collected | 1445 | | metal | Marz 22 | | 035556 | |
| S23 | " " | | " | | VCA | EEB59 | | 035557 | |
| S23 | " " | | " | | VON | EEB59 | | 035558 | |
| S24 | S-3 19-20½ | not collected | 1458 | | metal | Marz 23 | | 035559 | |
| S24 | " " | | " | | VON | EEB60 | | 035560 | |
| S24 | " " | | " | | VON | EEB60 | | 035561 | |

MPCA SAMPLE TRACKING FORM

Sheet 1 of 4

Tags
JJ H/Hat

Site Name WCF Freezer
 Date 6/8/88
 Project Manager Kevum Vrach
 Technical Assistant Joe Volk
 Sample Coordinator _____

SAS Laboratory:

Organic Contract Laboratory: Gulf South Env. L.
 Inorganic Contract Laboratory: Keystone Env. Re.
 Shipping Date: 6/9/88
 Custody Seals: inorg 96522 96523
Org 96524 96525

| Sample Number | Sample Location | Sample Matrix | Time | Date | Designate | Traffic Report Number | CRL Log Number | EPA Tag Number | EPA Bottle Number |
|---------------|----------------------------|---------------|------|------|-----------|-----------------------|----------------|----------------|-------------------|
| 525 | B4 9-10 ¹ /Soil | 1000 | 6/8 | | metal | Mezz 24 | 87YVOI | 035562 | F8236101 |
| S25 | | " | | | VOA | EEB 61 | " | 563 | D8159184 |
| S25 | | " | | | VOA | EEB 61 | " | 564 | D8159184 |
| S26 | B4 11 ¹ /13 | 1010 | | | metal | Mezz 25 | " | 565 | |
| S26 | | " | | | VOA | EEB 62 | " | 566 | |
| S26 | | " | | | VOA | EEB 62 | " | 567 | |
| S27 | B4 14-15 ¹ | 1025 | | | metal | Mezz 26 | " | 568 | |
| S27 | | | | | VOA | EEB 63 | " | 569 | |
| S27 | | | | | VOA | EEB 63 | " | 570 | |
| S28 | B4 16 ¹ -18 | 1045 | | | metal | Mezz 27 | " | 571 | |
| S28 | | | | | VOA | EEB 64 | " | 572 | |
| S28 | | | | | VOA | EEB 64 | " | 573 | |
| | | | | | | | | | |
| | | | | | | | | | |

25 - 65
26 - 68

MPCA SAMPLE TRACKING FORM

Sheet 2 of 4

Site Name _____
Date _____
Project Manager _____
Technical Assistant _____
Sample Coordinator _____

SAS Laboratory: _____
Organic Contract Laboratory: _____
Inorganic Contract Laboratory: _____
Shipping Date: _____
Custody Seals: _____

MPCA SAMPLE TRACKING FORM

Sheet 3 of 4

Site Name _____
Date _____
Project Manager _____
Technical Assistant _____
Sample Coordinator _____

SAS Laboratory: _____
Organic Contract Laboratory: _____
Inorganic Contract Laboratory: _____
Shipping Date: _____
Custody Seals: _____

| Sample Number | Sample Location | Sample Matrix | Time | Date | Designate | Traffic Report Number | CRL Log Number | EPA Tag Number | EPA Bottle Number |
|---------------|-----------------|---------------|------|------|-----------|-----------------------|----------------|----------------|-------------------|
| S-33 | B-5 11½-13 | soil | 1350 | 6/8 | Metal | Mezz 32 | 894VO1 | 407 | |
| S-33 | | | | | VOA | EEB 69 | | 408 | |
| S-33 | | | | | VOA | EEB 69 | | 409 | |
| S-34 | B-5 14-15½ | | 1405 | 6/8 | metal | no metals Mezz 33 | | 410 | |
| S-34 | | | | | VOA | EEB 70 | | 411 | |
| S-34 | | | | | VOA | EEB 70 | | 412 | |
| S-35 | B-5 16½18 | | 1415 | 6/8 | metal | Mezz 34 | | 035413 | |
| S-35 | | | | | VOA | EEB 71 | | 035414 | |
| S-35 | | | 1435 | | VOA | EEB 71 | | 035415 | |
| S-36 | B-5 19-20½ | | 1430 | | Metal | Mezz 35 | | 035416 | |
| S-36 | | | | | VOA | EEB 72 | | 035417 | |
| S-36 | | | | | VOA | EEB 72 | | 035418 | |

MPCA SAMPLE TRACKING FORM

Sheet 4 of 4

Site Name _____
Date _____
Project Manager _____
Technical Assistant _____
Sample Coordinator _____

SAS Laboratory: _____
Organic Contract Laboratory: _____
Inorganic Contract Laboratory: _____
Shipping Date: _____
Custody Seals: _____



United States Environmental Protection Agency
Contract Laboratory Program Sample Management Office
PO Box 818 Alexandria, VA 22313
703-557-2490 FTS 557-2490

Organic Traffic Report

(For CLP Use Only)

| | |
|-------------|-------------------------|
| Case Number | SAS No. (if applicable) |
| 12095 | |



**United States Environmental Protection Agency
Contract Laboratory Program Sample Management Office
PO Box 818 Alexandria, VA 22313
703-557-2490 FTS 557-2490**

Organic Traffic Report

(For CLP Use Only)

| | |
|-------------|-------------------------|
| Case Number | SAS No. (if applicable) |
| 12095 | [Redacted] |



United States Environmental Protection Agency
Contract Laboratory Program - Sample Management Office
PO Box 818 Alexandria, VA 22313
703-557-2490 FTS 557-2490

Organic Traffic Report

(For CLP Use Only)

| | |
|-------------|-------------------------|
| Case Number | SAS No. (if applicable) |
| 12095 | |

CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | | | | | NO. OF CONTAINERS | REMARKS | | | | | |
|------------------------------|-------------------|------|--------------|--------------------------------------------|------------------|-------------------------|------------------------------|-----------------------------|---|-------------|--------------------------|-----------------------|
| 89W01 | St. Louis Monies | | | | | | 125 MI. USA | | | | | |
| SAMPLERS: (Signature) | <i>Kevin Koch</i> | | | | | | Corresp | ITR | # | Tag #' | | |
| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | 2 | 2 | | | | | |
| EB45 | 6/18/89 | 959 | X | | B2 | 2 | 2 | | | | | MEEZ 08 S-035515, 516 |
| EB46 | " | 1011 | X | | B2 | 2 | 2 | | | | | " 09 S-035518, 517 |
| EB48 | " | 1045 | X | | B2 | 2 | 2 | | | | | " 11 S-035524, 527 |
| EB47 | " | 1056 | X | | B2 | 2 | 2 | | | | | " 12 S-035527, 528 |
| EB51 | " | 1148 | X | | B2 | 2 | 2 | | | | | " 14 S-035528, 534 |
| EB53 | " | 1334 | X | | B3 | 2 | 2 | | | | | " 16 S-035539, 540 |
| EB55 | " | 1357 | X | | B-3 | 2 | 2 | | | | | " 18 S-035545, 546 |
| EB56 | " | 1405 | X | | B-3 | 2 | 2 | | | | | " 19 S-035548, 549 |
| EB58 | " | 1430 | X | | B-3 | 2 | 2 | | | | | " 21 S-035554, 555 |
| EB60 | " | 1438 | X | | B-3 | 2 | 2 | | | | | S-035560, 561 |
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| <i>Kevin Koch</i> | | | 6/18/89 2200 | | | | | | | | | |
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| | | | | | | | | Lab Name GCF South Env. Lab | | | | |
| | | | | | | | | C.C. seals # 96524, 96525 | | | | |

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05-00010

CHAIN OF CUSTODY RECORD

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Remarks : Airbill: 250882 ~~192~~-203
Lab name: Gulf Salt ~~203abs~~
C.C. seals 96524, 7652

05-JOOIV



United States Environmental Protection Agency
Contract Laboratory Program Sample Management Office
PO Box 818 Alexandria, VA 22313
703-557-2490 FTS 557-2490

Inorganic Traffic Report (For CLP Use Only)

Case Number **12095** SAS No. (if applicable)

| 1. Type of Activity (Check one) <input type="checkbox"/> ENF <input type="checkbox"/> NPLD <input type="checkbox"/> RA <input type="checkbox"/> SI <input type="checkbox"/> STSI <input type="checkbox"/> ER <input type="checkbox"/> O&M <input type="checkbox"/> RD <input type="checkbox"/> ST <input type="checkbox"/> Other (Specify) <input type="checkbox"/> ESI <input type="checkbox"/> PA <input type="checkbox"/> RIFS <input type="checkbox"/> STPA | | | | | | | | 2. Region Number 5 | Sampling Co. MPCA | 4. Date Shipped 6/9/89 | Airbill Number 250882203 | 5. Sample Description (Enter In Column A) | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------|---------------------|---------|----------------------------|----------------------------|---------------------------------------------|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------------------------------------|--|
| | | | | | | | | Sampler (Name) Kevin Vearl | Carrier 192 | 1. Surface Water 2. Ground Water 3. Leachate 4. Rinsate 5. Soil/Sediment 6. Oil (SAS) 7. Waste (SAS) 8. Other (SAS) (Specify) | | | |
| Non-Superfund Program RCRA RFA Site Name WCI Freezer Division City, State St. Cloud, MN | | | | | | | | Site Spill ID | 3. Ship To: Keystone Env. Res 3000 Tech. Ctr. Dr. Monroeville PA 15146 c/o Mary Badich | Double volume required for matrix spike/duplicate aqueous sample. Ship medium and high concentration samples in paint cans. | | | |
| | | | | | | | | | See reverse for additional instructions. | | | | |
| CLP Sample Number (From labels) | (A) Sample Descrip- tion (From box 1) | (B) Concen- tration L=low M=med H=high | (C) RAS Analysis | | (D) Special Handling | (E) Station Location | (F) Date/Time of Sample Collection | (G) Corresponding Organic Sample Number | | | | | |
| | | | Total Metals | Cyanide | | | | | | | | | |
| MEEZ00 | 5 | L | X | | | B1 | 6/10/89 | EEB 37 | Retained by MPCA | | | | |
| MEEZ01 | 5 | L | X | | | B1 | 6/5/10/89 | EEB 38 | | | | | |
| MEEZ02 | 5 | L | X | 1 | | B1 | 6/5/10/89 | EEB 39 | | | | | |
| MEEZ03 | 5 | L | X | | | B1 | 6/5/11/89 | EEB 40 | | | | | |
| MEEZ04 | 5 | L | X | | | B1 | 6/5/11/89 | EEB 41 | Retained by MPCA | | | | |
| MEEZ05 | 5 | L | X | | | B1 | 6/5/11/89 | EEB 42 | | | | | |
| MEEZ06 | 5 | L | X | | | B1 | 6/5/11/89 | EEB 43 | Retained by MPCA | | | | |
| MEEZ07 | 5 | L | X | | | B1 | 6/5/12/89 | EEB 44 | | | | | |
| MEEZ08 | 5 | L | X | | | B2 | 6/7/9/89 | EEB 45 | | | | | |
| MEEZ09 | 5 | L | X | | | B2 | 6/7/10/89 | EEB 46 | | | | | |
| MEEZ10 | 5 | L | X | | | B2 | 6/7/10/89 | EEB 47 | Retained by MPCA | | | | |
| MEEZ11 | 5 | L | X | | | B-2 | 6/7/10/89 | EEB 48 | | | | | |
| MEEZ12 | 5 | L | X | | | B-2 | 6/7/10/89 | EEB 49 | | | | | |
| MEEZ13 | 5 | L | X | | | B-2 | 6/7/11/89 | EEB 50 | Sample retained by MPCA | | | | |
| MEEZ14 | 5 | L | X | | | B-2 | 6/7/11/89 | EEB 51 | | | | | |
| MEEZ15 | 5 | L | X | | | B-2 | 6/7/12/89 | EEB 52 | retained by MPCA | | | | |
| MEEZ16 | 5 | L | X | | | B-3 | 6/7/13/89 | EEB 53 | | | | | |
| MEEZ17 | 5 | L | X | | | B-3 | 6/7/13/89 | EEB 54 | retained by MPCA | | | | |
| MEEZ18 | 5 | L | X | | | B-3 | 6/7/13/89 | EEB 55 | | | | | |



United States Environmental Protection Agency
Contract Laboratory Program : Sample Management Office
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Inorganic Traffic Report

(For CLP Use Only)

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| Case Number | SAS No. (if applicable) |
| 12095 | |

CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | | | | | NO. OF CON- TAINERS | REMARKS | | | | | | |
|------------------------------|----------------|--------------|-------|--------------------------------------------|------------------|------------------------------|------------------------------|--------------------------------------------------------------------------------------------------------------|--|--------------------------|--|--------|----------|
| 89YV01 | St. Das Moines | | | | | | Case # - 12095 | | | | | | |
| SAMPLERS: (Signature) | Kevon Veach | | | | | | Corresponding OTR # TAG # | | | | | | |
| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | | | | | | | | |
| MEEZ01 | 6/5/89 | 1034 | X | | B-1 | 1 | 1 | | | | | EEB 38 | 5-035493 |
| MEEZ02 | 6/5/89 | 1048 | X | | B-1 | 1 | 1 | | | | | EEB 39 | 5-035496 |
| MEEZ03 | 6/5/89 | 1100 | X | | B-1 | 1 | 1 | | | | | EEB 40 | 5-035499 |
| MEEZ05 | 6/5/89 | 1132 | X | | B-1 | 1 | 1 | | | | | EEB 42 | 5-035505 |
| MEEZ07 | 6/5/89 | 1202 | X | | B-1 | 1 | 1 | | | | | EEB 44 | 5-035511 |
| MEEZ08 | 6/7/89 | 959 | X | | B-2 | 1 | 1 | | | | | ECD 45 | 5-035514 |
| MEEZ09 | 6/7/89 | 1011 | X | | B-2 | 1 | 1 | | | | | ECD 46 | 5-035519 |
| MEEZ11 | 6/7/89 | 1045 | X | | B-2 | 1 | 1 | | | | | ECD 48 | 5-035523 |
| MEEZ12 | 6/7/89 | 1056 | X | | B-2 | 1 | 1 | | | | | ECD 49 | 5-035526 |
| MEEZ13 | 6/7/89 | 1148 | X | | B-2 | 1 | 1 | | | | | ECD 51 | 5-035532 |
| MEEZ16 | 6/7/89 | 1334 | X | | B-3 | 1 | 1 | | | | | ECD 53 | 5-035538 |
| MEEZ18 | 6/7/89 | 1357 | X | | B-3 | 1 | 1 | | | | | ECD 55 | 5-035544 |
| MEEZ19 | 6/7/89 | 1405 | X | | B-3 | 1 | 1 | | | | | ECD 56 | 5-035547 |
| MEEZ21 | 6/7/89 | 1430 | X | | B-3 | 1 | 1 | | | | | ECD 58 | 5-035553 |
| | | | | | BBB | 12 | 12 | | | | | | |
| Relinquished by: (Signature) | | Date / Time | | Received by: (Signature) | | Relinquished by: (Signature) | | Date / Time | | Received by: (Signature) | | | |
| Kevon Veach | | 6/18/89 2715 | | | | | | | | | | | |
| Relinquished by: (Signature) | | Date / Time | | Received by: (Signature) | | Relinquished by: (Signature) | | Date / Time | | Received by: (Signature) | | | |
| | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | Date / Time | | Received for Laboratory by: (Signature) | | Date / Time | | Remarks | | | | | |
| | | | | | | | | Air bill Number 250882203 192 Lab Name - Keystone Environ. Resources CCC Seal's 96522 96533 | | | | | |

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05-00831

CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | | | | | NO. OF CON- TAINERS | Case # - 12095 | | | | | | REMARKS | |
|------------------------------|----------------|------|-------------|------|--------------------------------------------|------------------------------|------------------------------|---|--------------------------------------------------------------------------------------------------|-------------|--|--------------------------|---------|----------|
| 89WVOI | St. Des Moines | | | | | | 6 CON MARKS | | | | | | | |
| SAMPLERS: (Signature) | Kevin Beach | | | | | | CONT'D OTR # | | | | | | | |
| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | | | | | | | | | Tag # |
| Merz 24 | 6/8/89 | 1000 | X | | B-4 | | 1 | 1 | | | | | | 5-035562 |
| Merz 26 | 6/8/89 | 1025 | X | | B-4 | | 1 | 1 | | | | | | 5-035568 |
| Merz 27 | 6/8/89 | 1045 | X | | B-4 | | 1 | 1 | | | | | | 5-035571 |
| Merz 28 | 6/8/89 | 1100 | X | | B-4 | | 1 | 1 | | | | | | 5-035574 |
| Merz 29 | 6/8/89 | 1110 | X | | B-4 | | 1 | 1 | | | | | | 5-035577 |
| Merz 32 | 6/8/89 | 1350 | X | | B-5 | | 1 | 1 | | | | | | 5-035407 |
| Merz 34 | 6/8/89 | 1415 | X | | B-5 | | 1 | 1 | | | | | | 5-035413 |
| Merz 35 | 6/8 | 1430 | X | | B-5 | | 1 | 1 | | | | | | 5-035416 |
| Merz 37 | 6/8 | 1455 | X | | B-5 | | 1 | 1 | | | | | | 5-035422 |
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| Kevin Beach | | | 6/8/89 2745 | | | | | | | | | | | |
| Relinquished by: (Signature) | | | Date / Time | | Received by: (Signature) | | Relinquished by: (Signature) | | | Date / Time | | Received by: (Signature) | | |
| | | | | | | | | | | | | | | |
| Relinquished by: (Signature) | | | Date / Time | | Received for Laboratory by: (Signature) | | Date / Time | | Remarks Airbill # 25088223 192 Lab name - Keystone Env. Resources CCO Seals 96522 96533 | | | | | |
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Appendix 3
Ground Water Sampling Visit Report

Appendix 4
WCI Sampling Data



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MPCA, HAZARDOUS
WASTE DIVISION

SUBSURFACE INVESTIGATION REPORT
WCI FREEZER DIVISION
ST. CLOUD, MINNESOTA

Prepared For:

Richard B. Clute
WCI Freezer Division
701 33rd Avenue North
St. Cloud, MN 56303

Prepared By:

PACE Laboratories, Inc.
1710 Douglas Drive North
Minneapolis, MN 55422

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| Appendix 2 Report of Laboratory Analyses (PACE)..... | Tab 3 |
| Appendix 3 Report of Laboratory Analyses (MPCA)..... | Tab 4 |
| Appendix 4 WCI Data Comparison..... | Tab 5 |

I. Scope of Work

On June 5-8, 1989 soil borings were drilled at seven locations on WCI property. In addition, monitoring wells were installed at three of the seven soil boring locations. Soil boring and well locations were agreed upon by Minnesota Pollution Control Agency (MPCA) and WCI Freezer Division staff. Approximate boring and well locations are shown on Figure 1.

All soil borings were advanced with a hollow stem auger and three inch split spoon samples were collected at two and one-half foot intervals at five of the seven boring locations. Except as noted in Section II (below), selected portions of the borings were screened for organic vapors in the field using a HNu ISPI-101 trace gas analyzer. Selected portions of the borings were sampled by PACE and by the MPCA for subsequent laboratory analyses. Ground water samples were collected from the monitoring wells and samples were provided to MPCA and Metcalf and Eddy on August 23, 1989. A copy of the Braun Engineering Testing, Inc. report on drilling and well installation activities is provided in Appendix 1. Copies of the PACE and MPCA reports of laboratory analyses for the samples are provided in Appendices 2 and 3, respectively. A comparative Table of MPCA and PACE volatile organics data is provided in Appendix 4.

II. Review of Field and Laboratory Analytical Data

Soil Boring Samples

Boring B-1 (Braun designation ST-1) was placed in an open area on the southwestern portion of the property (see Figure 1). The location was chosen to allow collection of information on background soil, metal and organic concentration ranges.

Soil samples were obtained at two and one-half foot increments to a depth of 20-1/2 feet. Samples were screened in the field with the HNu. Instrument problems prevented the collection of reliable data.

The MPCA collected samples from the four to 20-1/2 foot interval and analyzed the samples for RAS total metals and volatile organic compounds (VOCs). PACE collected samples from the nine to 20-1/2 foot depth and analyzed for RAS total metals and cyanide. In addition, samples from the 16-1/2 to 18 and 19 to 20-1/2 foot intervals were analyzed by PACE for VOCs.

Data from both laboratories (for comparable sample intervals) is generally similar. Metal concentrations from sample to sample were either quite consistent (antimony, arsenic, beryllium, cobalt,

April 23, 1990

Page 2

copper, lead, mercury, selenium, silver, thallium and vanadium) or varied by a factor of as much as two or more (aluminum, barium, cadmium, calcium, chromium, iron, magnesium, manganese, nickel, potassium, sodium, and zinc). Detectable concentrations of VOCs and cyanide were not reported present in samples analyzed by PACE.

MPCA's contract laboratory reported methylene chloride, acetone and methyl ethyl ketone (2-butanone) in most of their samples and blanks indicating that positive results are attributable to sampling or laboratory contamination.

Boring B-2 (Braun designation ST-6) was drilled to a depth of 22 feet on the west side of the 1980 warehouse building (See Figure 1). Samples from the nine to 22 foot increment of the boring were field screened with the HNu. Organic vapors were not noted in any of the samples.

The MCPA collected samples (their designation B-4) from the nine to 22 foot depth for analyses of RAS total metals and VOCs. PACE collected samples from the nine to 22 foot increment for analyses of RAS total metals and cyanide. In addition, samples from the nine to ten and one-half foot increment and the 19 to 20-1/2 foot increment were collected and analyzed by PACE for VOCs.

Metal data from both laboratories (for comparable sample intervals) is reasonably similar. The data indicates sample to sample variability in metals concentrations with no obvious patterns apparent. Metals of interest (chromium and lead) were noted at concentrations not significantly different compared to background concentrations. Cyanide and VOCs were not present in PACE's samples at detectable concentrations. The MPCA's contract laboratory reported acetone and methylene chloride present in samples and associated blanks from the entire sampled interval. Again, these consistent results indicate sampling or laboratory contamination.

Boring B-3 (Braun designated ST-7) was drilled to a depth of 25-1/2 feet on the south side of the 1980 warehouse building (see Figure 1). Samples from the six and one-half to 25-1/2 foot interval of the boring were field screened with the HNu. Organic vapors were reported present at 16-1/2 to 18 feet, 19 to 20-1/2 feet and 24 to 25-1/2 feet at 1, 1.5 and 2.5 parts per million (ppm), respectively.

The MPCA collected samples (their designation B-5) from the 14 to 25-1/2 foot interval for analyses of RAS total metals and from the 11-1/2 to 25-1/2 foot interval for VOCs. PACE collected samples from the nine to 25-1/2 foot section for analyses of RAS metals and cyanide. In addition, samples from the 21-1/2 to 25-1/2 foot interval were analyzed by PACE for VOCs.

February 9, 1990

Page 3.

Metals data from both laboratories (for comparable sample intervals) is similar when matrix interferences, spike recovery control limit and duplicate control limit differences are considered. The data indicates sample to sample variability in metals concentrations and no apparent pattern. Chromium and lead concentrations were not significantly different from concentrations in the background samples. Cyanide and VOCs were not present in PACE's samples at detectable concentrations. The MPCA's contract laboratory reported acetone and methylene chloride present in samples and blanks in four of the five sampled intervals indicating laboratory contamination in sample preparation or analyses. In the case of the 16-1/2 to 18 foot interval, methylene chloride was reported present in samples and blanks while acetone was originally reported present in the sample and blank(s) but was later somehow determined not present in the associated blanks(s). Supporting information for this determination is not provided in the materials supplied by the MPCA.

Boring B-4 (Braun designation ST-4) was drilled to a depth of 17 feet on the south side of the Number 4 paint system building (see Figure 1). Samples from the entire sample interval were field screened with the HNu. Organic vapors were not noted in any of the samples.

The MPCA collected samples (their designation B-2) from the zero to 14-1/2 foot interval and analyzed the samples for VOCs. PACE collected samples from the zero to three foot depth for VOC analyses.

Detectable concentrations of VOCs were not present in the PACE samples. The MPCA's contract laboratory reported acetone and methylene chloride present in samples and associated blanks from the zero to one and one-half foot and one and one-half to three foot intervals. Acetone and methylene chloride were reported present in the six and one-half to eight foot sample and associated blank. Acetone and methylene chloride were present in samples (and blanks) from the nine to 14-1/2 foot interval and methyl ethyl ketone (MEK) ranged from 34 to 37 ug/kg in that interval. This pattern again indicates laboratory contaminant sources.

Boring B-5 (Braun designation ST-5) was drilled to a depth of 20-1/2 feet on the south side of the Number 4 paint system building east of B-4. Samples for the entire sample interval were field screened with the HNu. Organic vapors were not noted in any of the samples.

The MPCA collected samples (their designation B-3) from selected portions of the one and one-half to 20-1/2 foot interval for analyses of VOCs. PACE collected samples from the one and one-half to five and one-half foot interval for VOC analyses.

February 9, 1990

Page 4

Detectable concentrations of VOC were not present in samples collected by PACE. The MPCA's contract laboratory again reported acetone and methylene chloride in all samples and associated blanks.

Ground Water Samples

Monitoring wells MW-1, MW-2 and MW-3 were sampled on August 23, 1989 as noted earlier in this report.

The MPCA collected split samples from the wells for analyses of RAS metals and VOCs. PACE collected samples for RAS metals, cyanide and VOCs.

Review of the data indicates that metals concentrations as reported by PACE and MPCA's contract laboratory are similar. Detectable concentrations of cyanide and VOCs were not present in the samples analyzed by PACE. MPCA's contract laboratory did not report detectable concentrations of VOCs in the samples with the exception of methylene chloride in the MW-1 sample which was due to laboratory contamination.

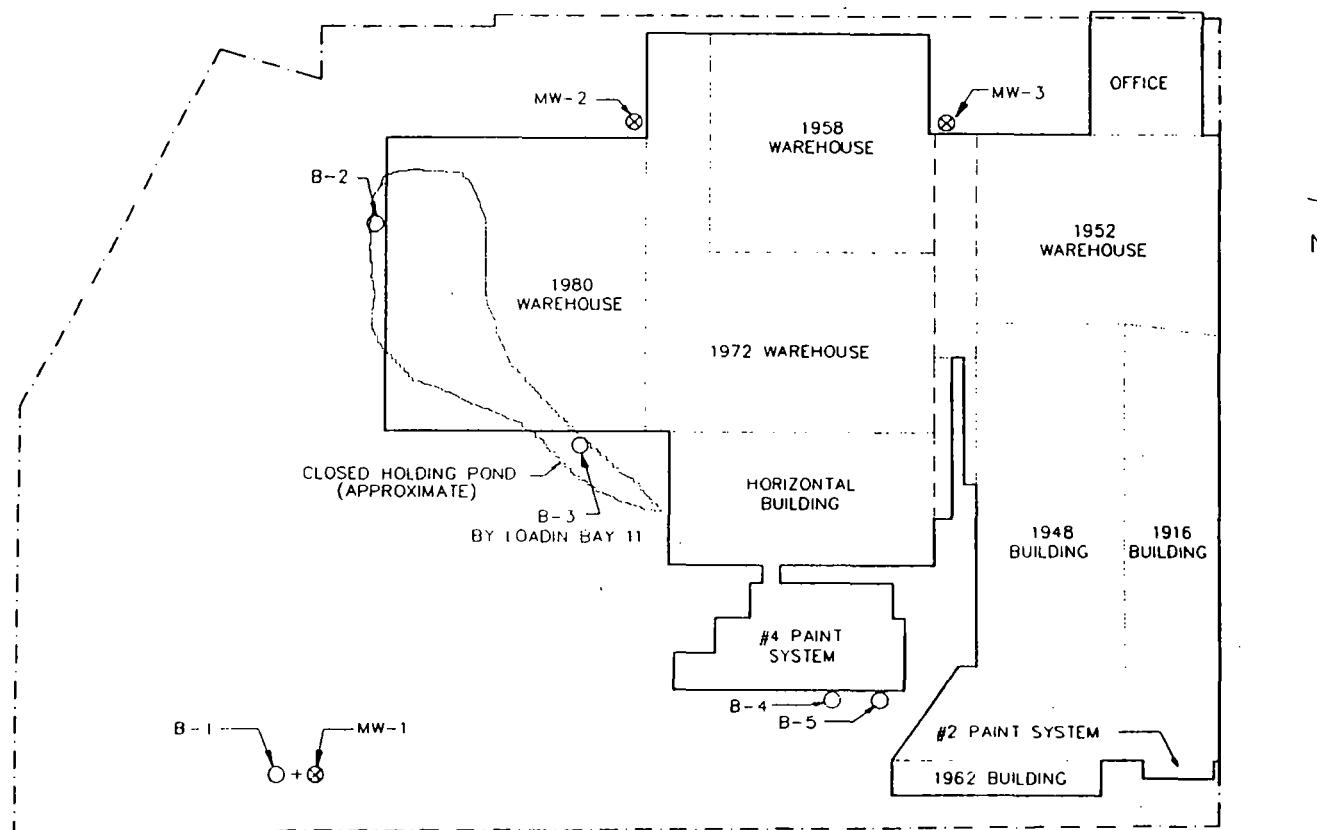
III. Conclusions and Recommendations

In our opinion, the periodic reporting of acetone, methylene chloride, MEK, unknown hydrocarbons and unknown compounds by the MPCA's contract laboratory in both samples and associated blanks is reflective of laboratory contaminant sources. We further believe that releases of hazardous constituents to soils and ground water have not been demonstrated at the WCI facility. Aside from future abandonment of the monitoring wells described in this report, further investigative efforts are not suggested or necessary.

FIGURE 1
WCI FREEZER DIVISION
SOIL BORING AND WELL LOCATIONS

PACE Laboratories, Inc.

June 5-8, 1989



○ SOIL BORING LOCATION

⊗ MONITORING WELL LOCATION

Recd 1/22/89

C89-112 SOIL BORINGS & MONITORING
WELL INSTALLATION
SERVICES
WCI Freezer Division
701 N 33rd Ave.
St. Cloud, MN

WCI FREEZER DIVISION

July 19, 1989



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St. Cloud, MN 56302
(612) 253-9940
FAX #253-3054

July 19, 1989

WCI Freezer Division
701 N 33rd Ave.
St. Cloud, MN 56303

Attn: Mr. Richard Clute:

C89-112 SOIL BORINGS & MONITORING
 WELL INSTALLATION
 SERVICES
WCI Freezer Division
701 N 33rd Ave.
St. Cloud, MN

Dear Mr. Clute:

We have recently conducted seven soil borings and installed and developed three monitoring wells at the WCI Freezer Division site located in St. Cloud, MN. These services were authorized by you on May 26, 1989.

FIELD INVESTIGATION

The soil borings were conducted and the monitoring wells installed between June 5 and 8, 1989. The boring locations were selected and well depths determined in the field by a representative from PACE Laboratory, Inc. A sketch showing the boring/monitoring well locations, as installed, is included with this report.

The ground surface elevation at the bore hole locations and at the top of the riser pipes were provided by RCM Associates, Inc.

The penetration test borings were performed between June 2 and June 6, 1989, with a truck-mounted core and auger drill. The sampling was in accordance with ASTM D1586 "Penetration Test and Split Barrel Sampling of Soils". Using this method, we advanced the bore hole with the hollow-stem auger to the desired test depth. Then a 140-pound hammer falling 30 inches drove a standard, 3-inch OD, split barrel sampler a total penetration of 1½ feet below the tip of the hollow-stem auger. The blows for the last foot of penetration were

recorded and are an index of soil strength characteristics. Soil samples were taken at increments indicated on the Log of Boring sheets.

Soils encountered in the borings were visually and manually classified in the field by the crew chief in accordance with ASTM D2487 "Unified Soils Classification System" and ASTM D2488 "Recommended Practice for Visual and Manual Description of Soils." A copy of ASTM D2487 is attached. Due to the amount of sample obtained at each sampling interval by PACE & the Minnesota Pollution Control Agency (MPCA), representative samples were not returned to the laboratory for review of the field classifications by a soils engineer. Therefore, the Log of Boring sheets are based solely on the field classifications.

RESULTS

Log of Boring sheets indicating the depth and identification of the various soil strata, the penetration resistances and water level information are attached. It should be noted that the depths shown as boundaries between the strata are only approximate. The actual change may be more of a transition and the depth of change likely varies horizontally.

In addition to the attached Log of Boring sheets, monitoring well diagrams and water well records have been prepared indicating the pertinent well installation data.

The monitoring wells were installed utilizing a two-inch diameter stainless steel riser pipe and stainless steel well screen. The screens are ten feet in length and have a .010 inch slot size. The stainless steel riser pipe was then extended to the surface with the riser pipe being encased in a four inch diameter protective casing with locking cap. In addition, steel protective posts were installed at each monitoring well. The monitoring wells were installed in accordance with current Minnesota Department of Health Water Well Construction Code.

The monitoring wells were developed by means of bailing on June 9, 1989. The bailer utilized was 1.75 inches in diameter and five feet in length. Each of the monitoring wells were bailed for approximately two hours. Sixty-five, fifty-five and fifty gallons of water were evacuated from monitoring wells one, two and three respectively. After the bailing process was completed the water clarity in monitoring wells one and three appeared cloudy and monitoring well two was clear.



July 19, 1989

REMARKS

It is our pleasure to be of service to you by providing these soil borings and monitoring well installation services. If you have any questions regarding the services provided to date, or if we can be of assistant in further evaluating these data, please contact Mr. Gary Traut at (612)253-9940.

Very truly yours,

BRAUN ENGINEERING TESTING, INC.

Gary S. Traut

Gary S. Traut
Senior Engineering Assistant

George D. Kluempke

George D. Kluempke, P.E.
Vice President

GLT/GDK/bjb

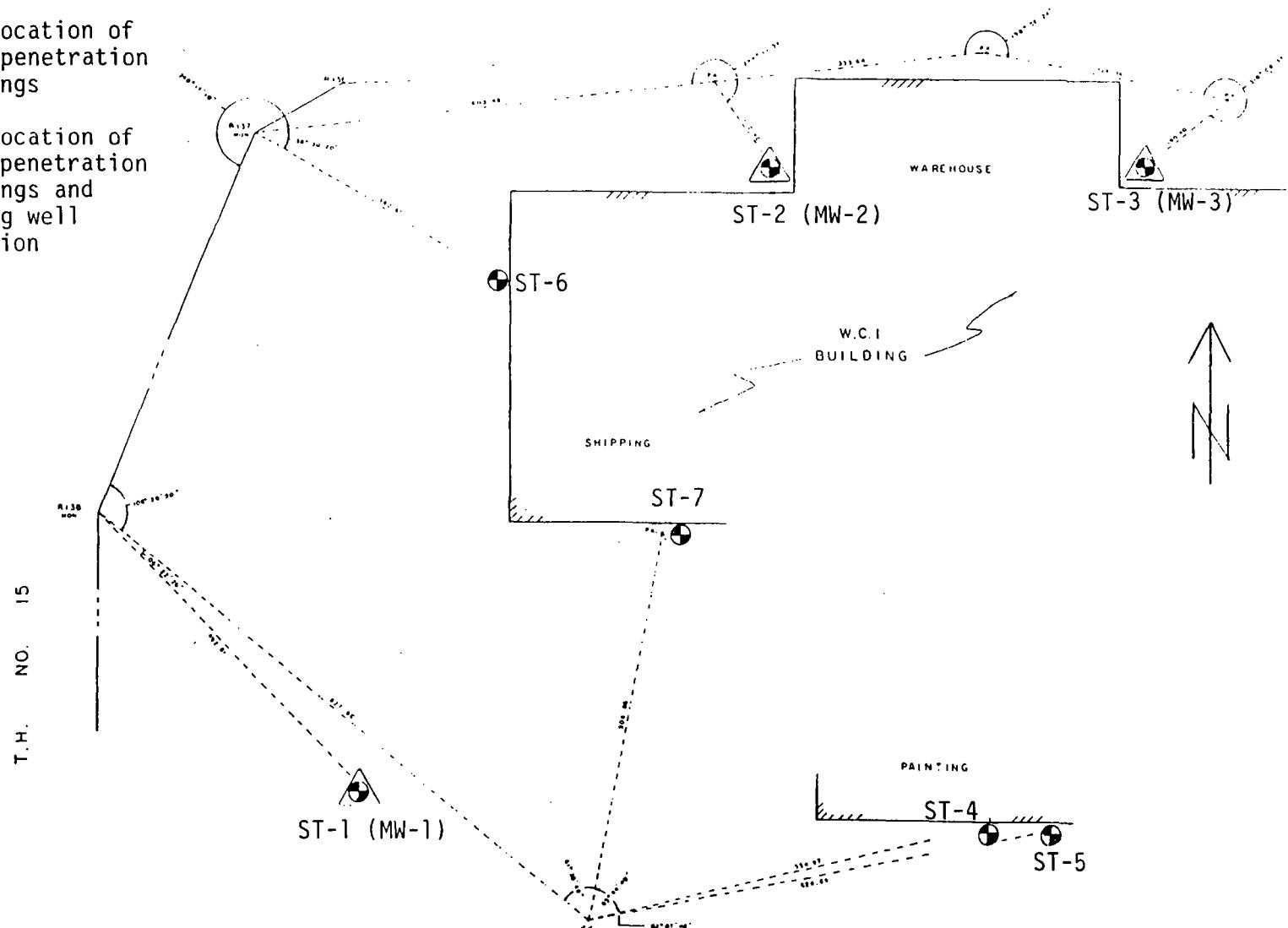
cc: Pace Laboratories, Inc.
Dan Comeau



8 TH STREET N.

● — Denotes location of standard penetration test borings

▲ — Denotes location of standard penetration test borings and monitoring well installation



C89-112 SOIL BORINGS AND MONITORING WELL INSTALLATION SERVICES
WCI Freezer Division
701 N 33rd Ave.
St. Cloud, MN

BRAUN

| | |
|----------|-----------|
| Date: | 7/17/89 |
| Revised: | |
| Drawn: | GLT |
| Scale: | Reduction |

LOG OF BORING



PROJECT:
C89-112 SOIL BORINGS AND MONITORING WELL
INSTALLATION SERVICES
WCI Freezer Division
701 N 33rd Ave.
St. Cloud, MN

BORING: ST-1 (MW-1)

LOCATION:

See Attached Sketch

DATE: 6-5-89 **SCALE:** 1"=4'

| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM D2488) | BPF | WL | Tests or | Notes |
|--------|-------|-------------------|----------------------------------------------------------------------------------------------------------------------------|-----|----|----------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 1039.9 | 0.0 | | | | | | |
| 1038.9 | 1.0 | SP-SM | POORLY GRADED SAND with SILT, mostly fine to medium grained, ¹ | | | | 1 dark brown. (Topsoil) |
| | | SM | SILTY SAND, mostly fine to medium grained, with a trace of GRAVEL, brown, moist, medium ² | | | | 2 dense. (Outwash) |
| 1037.4 | 2.5 | SP | POORLY GRADED SAND with GRAVEL, mostly fine to medium grained, brown, moist, medium dense to dense. (Outwash) | 30 | | | The ground surface elevation at the bore hole locations and at the top of the riser pipe elevations were provided by RCM Associates, Inc. |
| | | | | 45 | | | |
| | | | | 11 | | | |
| 1030.9 | 9.0 | SP | POORLY GRADED SAND with GRAVEL, mostly fine to medium grained, brown, waterbearing, medium dense to dense. (Outwash) | 18 | | | V |
| | | | | 40 | | | |
| 1025.9 | 14.0 | SP | POORLY GRADED SAND, mostly fine to medium grained, with a trace of GRAVEL, brown, waterbearing, medium dense. (Outwash) | 27 | | | Monitoring well #1 installed in bore hole at the 15' depth. |
| | | | | 29 | | | |
| 1019.4 | 20.5 | | END OF BORING. Water level down 10' with 20' of hollow-stem auger in the ground. | 12 | | | |

(See Report and Standard Plates for evaluation and descriptive terminology.)

LOG OF BORING



PROJECT:
 C89-112 SOIL BORINGS AND MONITORING WELL
 INSTALLATION SERVICES
 WCI Freezer Division
 701 N 33rd Ave.
 St. Cloud, MN

BORING: ST-2 (MW-2)

LOCATION:

See Attached Sketch

DATE: 6-6-89 **SCALE:** 1"=4'

| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM D2488) | BPF | WL | Tests or | Notes |
|--------|-------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----------|-------------------------------------------------------------|
| 1041.9 | 0.0 | | | | | | |
| 1041.7 | 0.2 | SP | BITUMINOUS. POORLY GRADED SAND, mostly fine to medium grained, with a trace of GRAVEL, brown, moist, dense. (Outwash) | | | | |
| | | | | | | 31 | |
| 1027.9 | 14.0 | SP-SM | POORLY GRADED SAND with SILT, mostly fine to medium grained, with a little GRAVEL, brown to the 20' depth then gray, waterbearing, medium dense. (Outwash) | | | 14 | |
| | | | | | | 17 | |
| 1019.9 | 22.0 | | END OF BORING. Water level down 17' with 22' of hollow-stem auger in the ground. | | | | Monitoring well #2 installed in bore hole at the 22' depth. |

(See Report and Standard Plates for evaluation and descriptive terminology.)

LOG OF BORING



PROJECT:
**C89-112 SOIL BORINGS AND MONITORING WELL
 INSTALLATION SERVICES**
WCI Freezer Division
701 N 33rd Ave.
St. Cloud, MN

BORING: ST-3 (MW-3)

LOCATION:

See Attached Sketch

DATE: 6-5-89 **SCALE:** 1"=4'

| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM D2488) | BPF | WL | Tests or | Notes |
|--------|-------|-------------------|-----------------------------------------------------------------------------------------------------------------------------|-----|----|----------|-------------------------------------------------------------|
| 1041.7 | 0.0 | | | | | | |
| 1041.2 | 0.5 | | Concrete. | | | | |
| 1039.7 | 2.0 | | FILL: consisting primarily of POORLY GRADED SAND (SP), mostly fine to medium grained, dark | | | | |
| | | SP | POORLY GRADED SAND, mostly fine to medium grained, with a trace of GRAVEL, brown, moist. (Outwash) | | | | 1 brown, moist. |
| 1033.7 | 8.0 | SP-SM | POORLY GRADED SAND with SILT, mostly fine to medium grained, with a little GRAVEL, brown, moist, medium dense. (Outwash) | 14 | | | |
| 1027.7 | 14.0 | SP | POORLY GRADED SAND, medium to coarse grained, with a little GRAVEL, brown, waterbearing, medium dense. (Outwash) | 20 | | | |
| 1021.2 | 20.5 | | END OF BORING. Water level down 16' with 20' of hollow-stem auger in the ground. | 22 | | | Monitoring well #3 installed in bore hole at the 20' depth. |

(See Report and Standard Plates for evaluation and descriptive terminology.)

LOG OF BORING



PROJECT:
C89-112 SOIL BORINGS AND MONITORING WELL
INSTALLATION SERVICES
WCI Freezer Division
701 N 33rd Ave.
St. Cloud, MN

BORING: ST-4
LOCATION:
 See Attached Sketch

DATE: 6-7-89 **SCALE:** 1"=4'

| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM D2488) | BPF | WL | Tests | or | Notes |
|--------|-------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----|-------|----|-------|
| 1044.7 | 0.0 | | | | | | | |
| 1042.7 | 2.0 | | FILL: consisting primarily of SILTY SAND (SM), mostly fine to medium grained, with a trace of GRAVEL, dark brown, moist. | 14 | | | | |
| 1039.7 | 5.0 | SP | POORLY GRADED SAND, mostly fine to medium grained, with a little GRAVEL, few Cobbles, brown, moist, medium dense. (Outwash) | 18 | | | | |
| 1035.7 | 9.0 | SM | SILTY SAND, mostly fine to medium grained, with a trace of GRAVEL, few Cobbles, dark brown to black, moist, very dense. (TIII) | 32 | | | | |
| 1027.2 | 17.5 | SM | SILTY SAND, mostly fine to medium grained, with a trace of GRAVEL, few Cobbles, gray, moist, very dense. (TIII) | 55 | | | | |
| | | | END OF BORING. Water level not encountered with 17' of hollow-stem auger in the ground. Water level not encountered to cave-in depth of 15' immediately after withdrawal of auger. Boring then backfilled. | 300/3" | | | | |

(See Report and Standard Plates for evaluation and descriptive terminology.)

LOG OF BORING



| PROJECT: C89-112 SOIL BORINGS AND MONITORING WELL INSTALLATION SERVICES WCI Freezer Division 701 N 33rd Ave. St. Cloud, MN | | | | BORING: ST-5 | |
|-------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-------------------|
| | | | | LOCATION: See Attached Sketch | |
| DATE: 6-7-89 | | SCALE: 1"=4' | | | |
| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM D2488) | BPF | WL Tests or Notes |
| 1044.9 | 0.0 | | | | |
| 1044.5 | 0.4 | | BITUMINOUS. | | |
| | | | FILL: consisting primarily of POORLY GRADED SAND with GRAVEL (SP), mostly fine to medium grained, brown to dark brown, few Roots, moist. | | |
| 1041.9 | 3.0 | SP | POORLY GRADED SAND, mostly fine to medium grained, with a trace of GRAVEL, few Cobbles, brown, moist, medium dense. (Outwash) | 14 | |
| | | | | 11 | |
| | | | | 22 | |
| | | | | 22 | |
| | | | | | |
| 1032.9 | 12.0 | SM | SILTY SAND, mostly fine grained, with a little GRAVEL, gray, moist, very dense. (TIII) | 73 | |
| | | | | 139 | |
| | | | | 75 | |
| | | | | | |
| 1024.4 | 20.5 | | END OF BORING. Water level not encountered with 20' of hollow-stem auger in the ground. Boring then backfilled. | 84 | |

(See Report and Standard Plates for evaluation and descriptive terminology.)

LOG OF BORING

BRAUN
ENGINEERING TESTING

| PROJECT: C89-112 SOIL BORINGS AND MONITORING WELL INSTALLATION SERVICES WCI Freezer Division 701 N 33rd Ave. St. Cloud, MN | | | | BORING: ST-6 | |
|-------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-------------------|
| | | | | LOCATION: See Attached Sketch | |
| | | | | DATE: 6-8-89 | |
| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM D2488) | BPF | WL Tests or Notes |
| 1040.9 | 0.0 | | BITUMINOUS . | | |
| 1040.5 | 0.4 | | Aggregate Base. | | |
| 1039.4 | 1.5 | | FILL: consisting primarily of POORLY GRADED SAND (SP), mostly fine to medium grained, with a little GRAVEL, brown, moist. | | |
| 1032.9 | 8.0 | | POSSIBLE FILL: consisting primarily of SILTY SAND (SM), mostly fine to medium grained, with a trace of GRAVEL, dark brown, moist. | 41 | |
| 1029.9 | 11.0 | SP-SM | POORLY GRADED SAND with SILT, mostly fine to medium grained, with a little GRAVEL, brown, moist, dense. (Outwash) | 43 | |
| 1026.9 | 14.0 | SP | POORLY GRADED SAND, mostly fine to medium grained, with a trace of GRAVEL, brown, waterbearing, loose. (Outwash) | 9 | |
| 1020.9 | 20.0 | SC-SM | SILTY CLAYEY SAND, mostly fine to medium grained, with a trace of GRAVEL, gray, wet, very dense. (TILL) | 6 | |
| 1018.4 | 22.5 | | END OF BORING. Water level down 14' with 22' of hollow-stem auger in the ground. Water level not encountered to cave-in depth of 10' immediately after withdrawal of auger. Boring then backfilled. | 112 | 80 |

(See Report and Standard Plates for evaluation and descriptive terminology.)

LOG OF BORING

BRAUN
ENGINEERING TESTING

| PROJECT: C89-112 SOIL BORINGS AND MONITORING WELL INSTALLATION SERVICES WCI Freezer Division 701 N 33rd Ave. St. Cloud, MN | | | | BORING: ST-7 | |
|-------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|--------------|
| | | | | LOCATION: See Attached Sketch | |
| | | | | DATE: 6-8-89 | SCALE: 1"=4' |
| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM D2488) | BPF | WL |
| 1041.1 | 0.0 | | Concrete. | | |
| 1040.6 | 0.5 | | FILL: consisting primarily of POORLY GRADED SAND with GRAVEL, mostly fine to medium grained, brown, moist. | 60 | |
| 1030.1 | 11.0 | SP | POORLY GRADED SAND, mostly fine to medium grained, with a trace of GRAVEL, brown, waterbearing, very loose to medium dense. (Outwash) | 30 | |
| 1015.6 | 25.5 | | END OF BORING. Water level down 15' with 25' of hollow-stem auger in the ground. Water level down 12' immediately after withdrawal of auger. Boring then backfilled. | 22 | |

(See Report and Standard Plates for evaluation and descriptive terminology.)

MONITORING WELL FIELD DATA SHEET

Minnesota
Unique Well
Number

451745

Client _____ Proj. No. C89-112 Location WCI Freezer Division

Well Number MW-1
Date of Revision _____

Well Location _____ Date of Installation 6-5-89

Crew _____ B.M. Location & Elev. ($\pm 0.01'$)

Stick up above ground (to 0.1') 2.7'

Top of riser pipe (w/o cap) 1042.46
Elev. ($\pm 0.01'$)Ground surface Elev. ($\pm 0.1'$) 1039.9

Depth to bottom of surface seal 3'

Approximate water level before installation 7 1/2'

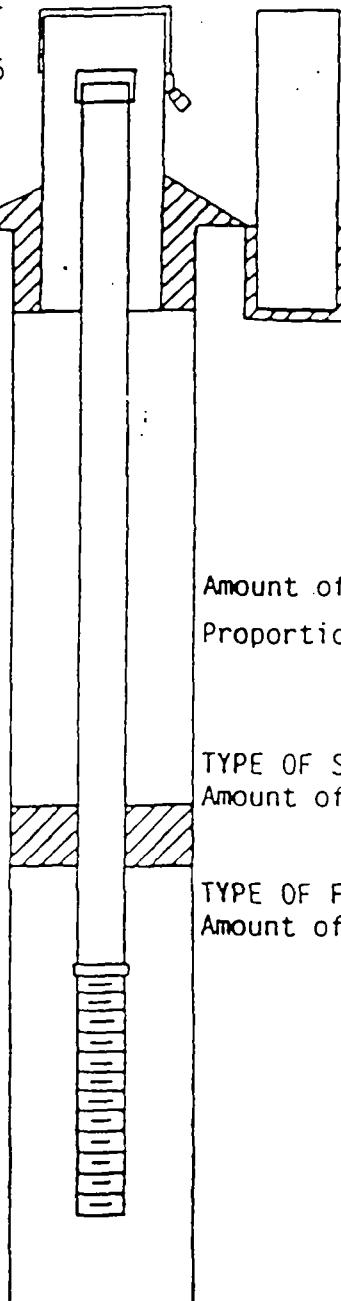
Approximate depth to first water encountered in drilling 8'

Depth to top of seal 3'
Depth to bottom of seal 4'

Depth to top of screen 5'

Depth to bottom of screen 15'

Depth to bottom of boring 20'

Method of advance:
HSA X I.D. 3 1/4"
Casing I.D. _____
Tricone O.D. _____BUMPER POST:
4" x 4" x 7' Wood _____
4" x 7' black capped steel 3 _____Protective Cover:
Type 4" black iron Length 5'
Lock # yes

Type of sealing material neat cement grout

RISER PIPE:
Type Stainless
Diameter 2'
Total Length 8'
Sections Used 1-5', 1-3'
Couplings NA
Cap Yes X No

NEAT CEMENT GROUT ABOVE SEAL

Amount of material used 1 bag Portland, 1/2 bag bentonite
Proportions _____TYPE OF SEALING MATERIAL: Bentonite slurry
Amount of material used 1/2 bag BentoniteTYPE OF FILTER MATERIAL: natural sand & silica sand
Amount of material used 1 bag silica sandSCREEN: Johnson
Type Stainless
Slot Size .010
Length 10'
Diameter 2"
Plug/Point Plug

Remarks: _____

Method of development:

Air _____

BRAUN

MONITORING WELL FIELD DATA SHEET

Minnesota
Unique Well

451746

Number

Client _____ Proj. No. C89-112 Location WCI Freezer Division
 Well Number MW-2 Well Location _____ Date of Installation 6-6-89
 Date of Revision _____ Crew _____ B.M. Location & Elev. (± 0.01)

Stick up above ground (to 0.1') 3.2'

Top of riser pipe (w/o cap) 1044.93
 Elev. (± 0.01)

Ground surface Elev. (± 0.1) 1041.9

Depth to bottom of surface seal 7 $\frac{1}{2}$ '

Approximate water level before installation 15'

Approximate depth to first water encountered in drilling 14'

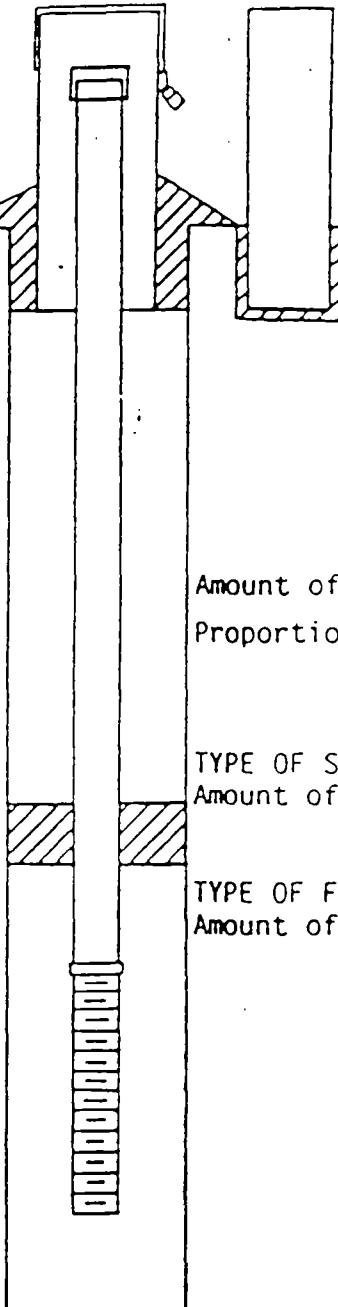
Depth to top of seal 7 $\frac{1}{2}$ '
 Depth to bottom of seal 9'

Depth to top of screen 12'

Depth to bottom of screen 22'

Depth to bottom of boring 22'

Method of advance:
 HSA X I.D. 3 $\frac{1}{4}$ "
 Casing I.D. _____
 Tricone O.D. _____



BUMPER POST: 4" x 4" x 7' Wood _____ Type 4" Black Iron
 4" x 7' black capped steel 2 Length 5'
 Lock # yes

Type of sealing material neat cement grout

RISER PIPE:
 Type Stainless
 Diameter 2"
 Total Length 15'
 Sections Used 1-10', 1-5'
 Couplings NA
 Cap Yes X No

NEAT CEMENT GROUT ABOVE SEAL

Amount of material used 2 Bags Portland, $\frac{1}{2}$ bag
 Proportions Bentonite

TYPE OF SEALING MATERIAL: Bentonite Slurry
 Amount of material used $\frac{1}{2}$ bag Bentonite

TYPE OF FILTER MATERIAL: Natural Sand
 Amount of material used --

SCREEN: Johnson
 Type Stainless
 Slot Size .010
 Length 10'
 Diameter 2"
 Plug/Point plug

Remarks: _____

Method of development:
 Air _____

BRAUN

MONITORING WELL FIELD DATA SHEET

Minnesota
Unique Well
Number

451747

Client _____ Proj. No. C89-112 Location WCI Freezer Division

Well Number MW-3

Well Location _____

Date of
Installation 6-6-89Date of
Revision _____

Crew _____

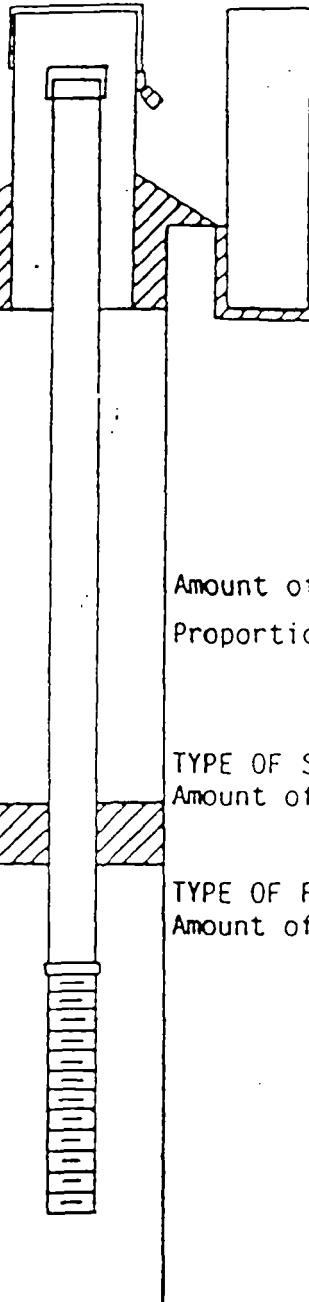
B.M. Location & Elev. (± 0.01)Stick up above ground
(to 0.1') 2.2'Top of riser pipe
(w/o cap) 1043.71
Elev. (± 0.01)Ground surface
Elev. (± 0.1) 1041.7Depth to bottom
of surface seal 7'Approximate water
level before
installation 14'Approximate depth
to first water
encountered in
drilling 14'Depth to top
of seal 7'Depth to bottom
of seal 8'Depth to top
of screen 10'Depth to bottom
of screen 20'Depth to bottom
of boring 20'

Method of advance:

HSA X I.D. 3 $\frac{1}{4}$ "

Casing I.D. _____

Tricone O.D. _____

BUMPER POST:
4" x 4" x 7' Wood _____
4" x 7' black _____
capped steel _____Protective Cover:
Type 4" Black Iron _____
Length 5' _____
Lock # yes _____

Type of sealing material neat cement grou

RISER PIPE:
Type Stainless
Diameter 2"
Total Length 12'
Sections Used T-10', T-5'
Couplings NA
Cap Yes X No _____

NEAT CEMENT GROUT ABOVE SEAL

Amount of material used 2 bag Portland, $\frac{1}{2}$ bag Benton
Proportions _____

TYPE OF SEALING MATERIAL: Bentonite Slurry

Amount of material used $\frac{1}{2}$ bag Bentonite

TYPE OF FILTER MATERIAL: Natural Sand

Amount of material used _____

SCREEN: Johnson
Type Stainless
Slot Size .010
Length 10'
Diameter 2"
Plug/Point plug _____

Remarks: _____

BRAUN

Method of development:

Air _____

WATER WELL RECORD

MINNESOTA UNIQUE WELL NO.

Minnesota Statutes 156A.01-08

for Water Sample

451746

1. LOCATION OF WELL

County Name

Stearns

Township Name

St. Cloud

Township Number

124

Range Number

28

Section No

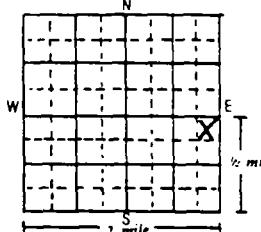
9

Fraction

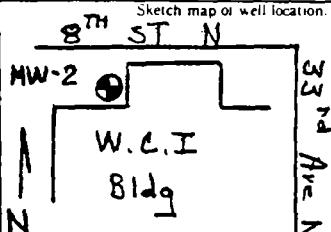
NE 1/4 NE 1/4 SE 1/4

Distance and Direction from Road Intersection or Street Address and City of Well Location

Show exact location of well in section grid with "X."



| | |
|---------------|--|
| Addition Name | |
| Block Number | |
| Lot Number | |



2. PROPERTY OWNER'S NAME

W.C.I. Freezer Division

Address 701 33rd Ave. No
St. Cloud, MN 56303

3. FORMATION LOG

COLOR

HARDNESS OF FORMATION

FROM

TO

Bituminous

0 . 2

Poorly graded sand Brown

. 2 14

Poorly graded sand w/silt Brown

14 22

STATE OF MINNESOTA DEPARTMENT OF HEALTH

WATER WELL RECORD

MINNESOTA UNIQUE WELL NO.

Minnesota Statutes 156A.01-08

for Water Sample

451745

1. LOCATION OF WELL

County Name

Stearns

Township Name

Township Number

Range Number

Section No.

Fraction

St. Cloud

124

S

28

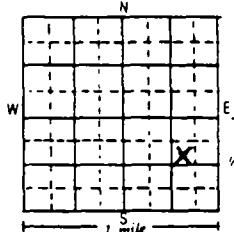
E

9

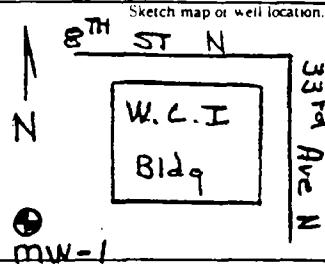
SW 1/4 NE 1/4 SE 1/4

Distance and Direction from Road Intersection or Street Address and City of Well Location

Show exact location of well in section grid with "X."



| | |
|---------------|--|
| Addition Name | |
| Block Number | |
| Lot Number | |



2. PROPERTY OWNER'S NAME

WCI Freezer Division

Address 701 33rd AVE. No

St. Cloud, MN 56303

3. FORMATION LOG

COLOR

HARDNESS OF FORMATION

FROM

TO

Poorly graded sand w/silt Brown

0

1

Silty Sand Brown

1

2.5

Poorly graded sand Brown

2.5

20

Poorly graded sand Brown

20

20

Poorly graded sand Brown

Descriptive Terminology

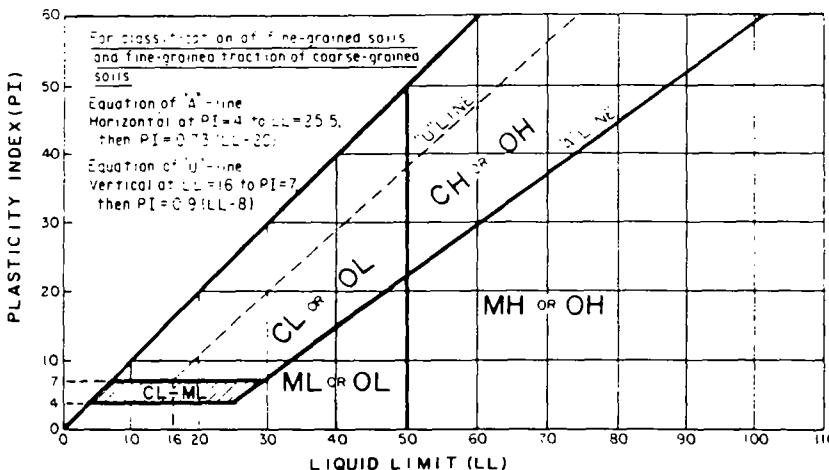


Designation D 2487 — 83

Standard Test Method for CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES

| CRITERIA FOR ASSIGNING GROUP SYMBOLS AND GROUP NAMES USING LABORATORY TESTS * | | | SOIL CLASSIFICATION | | |
|----------------------------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|--------------------------------------------|
| | | | GROUP SYMBOL | GROUP NAME | |
| COARSE-GRAINED SOILS more than 50% retained on No. 200 sieve | GRAVELS More than 50% of coarse fraction retained on No. 4 sieve | CLEAN GRAVELS Less than 5% fines c C _d ≥ 4 and 1 ≤ C _c ≤ 3 e C _d < 4 and/or 1 > C _c > 3 e | GW GP | Well-graded gravel f Poorly graded gravel f | |
| | | GRAVELS WITH FINES More than 12% fines d | Fines classify as ML or MH Fines classify as CL or CH | GM GC | Silty gravel f,g,h Clayey gravel f,g,h |
| | | SANDS 50% or more of coarse fraction passes No. 4 sieve | CLEAN SANDS Less than 5% fines d C _d ≥ 6 and 1 ≤ C _c ≤ 3 e C _d < 6 and/or 1 > C _c > 3 e | SW SP | Well-graded sand i Poorly graded sand i |
| | | SANDS WITH FINES More than 12% fines d | SM SC | Silty sand g,i,j,l Clayey sand g,i,j,l | |
| FINE-GRAINED SOILS 50% or more passed the No. 200 sieve | SILTS AND CLAYS Liquid limit less than 50% | PI > 7 and plots on or above "A" line j | CL | Lean clay k,l,m | |
| | | inorganic | PI < 4 or plots below "A" line j | ML | Silt k,l,m |
| | organic | Liquid limit - oven dried < 0.75 Liquid limit - not dried | OL | Organic clay k, l, m, o Organic silt k, l, m, o | |
| SILTS AND CLAYS Liquid limit 50% or more | PI plots on or above "A" line | CH | Fat clay k,l,m | | |
| | inorganic | PI plots below "A" line | MH | Elastic silt k,l,m | |
| | organic | Liquid limit - oven dried < 0.75 Liquid limit - not dried | OM | Organic clay k, l, m, o Organic silt k, l, m, o | |
| Highly organic soils | Primarily organic matter, dark in color, and organic odor | PT | Peat | | |

4. Based on the material passing the 3-in (75-mm) sieve.
5. If field sample contained cobbles and/or boulders, add "with cobbles and/or boulders" to group name.
6. Gravels with 5 to 12% fines require dual symbols
 GW-GM well graded gravel with silt
 GW-GE well graded gravel with clay
 GP-GM poorly graded gravel with silt
 GP-GE poorly graded gravel with clay
7. Sands with 5 to 12% fines require dual symbols
 SW-SM well graded sand with silt
 SW-SC well graded sand with clay
 SP-SM poorly graded sand with silt
 SP-SC poorly graded sand with clay
 $(D_{30})^{1/2}$
8. $C_u = 60/D_{10}$ $C_c = 0.10 \times D_{30}$
9. If soil contains ≥ 15% sand, add "with sand" to group name.
10. If fines classify as CL-ML, use dual symbol GC-GM, SC-SM.
11. If fines are organic, add "with organic fines" to group name.
12. If soil contains ≥ 15% gravel, add "with gravel" to group name.
13. If Atterberg limits plot in hatched area, soil is a CL-MC, silty clay.
14. If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel" whichever is predominant.
15. If soil contains ≥ 30% plus No. 200, predominantly sand, add "sandy" to group name.
16. If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.
17. PI ≥ 4 and plots on or above "A" line.
18. PI < 4 or plots below "A" line.
19. PI plots on or above "A" line.
20. PI plots below "A" line.



LABORATORY TESTS

| | | | |
|----|-----------------------------|----|---------------------------------|
| DD | Dry Density, pct | OC | Organic Content, % |
| WD | Wet Density, pct | S | Percent of Saturation, % |
| MC | Natural Moisture Content, % | SG | Specific Gravity |
| LL | Liquid Limit, % | C | Cohesion |
| PL | Plastic Limit, % | Ø | Angle of Internal Friction |
| PI | Plasticity Index, % | qu | Unconfined Compressive Strength |

PARTICLE SIZE IDENTIFICATION

| | | |
|----------|-------|-------------------------|
| Boulders | ..... | over 12" |
| Cobbles | ..... | 3" to 12" |
| Gravel | ..... |  |
| Coarse | ..... | 3" — 3" |
| Fine | ..... | No. 4 — $\frac{3}{4}$ " |
| Sand | ..... |  |
| Coarse | ..... | No. 4 — No. 10 |
| Medium | ..... | No. 10 — No. 40 |
| Fine | ..... | No. 40 — No. 200 |
| Silt | ..... | No. 200 — .005 mm |
| Clay | ..... | less than .005 mm |

RELATIVE DENSITY OF COHESIONLESS SOILS

| | | |
|--------------|-------|-----------|
| very loose | ..... | 0 — 4 E |
| loose | ..... | 5 — 10 E |
| medium dense | ..... | 11 — 30 E |
| dense | ..... | 31 — 50 E |
| very dense | ..... | 50+ E |

CONSISTENCY OF COHESIVE SOILS

| | | |
|--------------|-------|-----------|
| very soft | ..... | 0 — 1 E |
| soft | ..... | 2 — 3 E |
| rather soft | ..... | 4 — 5 E |
| medium | ..... | 6 — 8 E |
| rather stiff | ..... | 9 — 12 E |
| stiff | ..... | 13 — 16 E |
| very stiff | ..... | 17 — 30 E |
| hard | ..... | 30+ E |

DRILLING NOTES

Standard penetration test borings were advanced by 3 1/4" or 6 I.D. hollow-stem augers unless noted otherwise. Jetting water was used to clean out auger prior to sampling only where indicated logs. Standard penetration test borings are designated by prefix "ST" (Split Tube).

Power auger borings were advanced by 4" or 6" diameter continuous-flite solid stem augers. Soil classification and strata depths are inferred from disturbed samples augered to the surface and are therefore somewhat approximate. Power auger borings are designated by the prefix "B".

Hand probings were advanced manually with a 1 1/2" diameter probe and are limited to the depth from which the probe can be manually withdrawn. Hand probings are indicated by the prefix "H".

SAMPLING — All samples are taken with the standard 2" C split tube sampler, except where noted. TW indicates thin-walled (undisturbed) sample.

BPF — Numbers indicate blows per foot recorded in standard penetration test, also known as "N" value. The sampler is set into undisturbed soil below the hollow-stem auger. Drive resistances are then counted for second and third 6" increments and added to get BPF. Where they differ significantly, they are reported in the following form — 2/12 for the second and third increments respectively.

WH — WH indicates that sampler penetrated soil under weight of hammer and rods alone, driving not required.

NOTE — All tests run in accordance with applicable ASTM standards.

BRAUN



REPORT OF LABORATORY ANALYSIS

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WCI Freezer Division
701 33rd Avenue North
St. Cloud, MN 56303

July 27, 1989
PACE Project Number: 890517201

Attn: Mr. Dick Clute

Subsurface Invest.

Date Sample(s) Collected: 06/05/89
Date Sample(s) Received: 06/12/89

PACE Sample Number: 194490

B-1

Parameter Units MDL 9.0'-10.5' DATE ANALYZED

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|----------------|-------|------|-------|----------|
| Aluminum | mg/kg | 13 | 2900 | 06/21/89 |
| Antimony | mg/kg | 10 | 11 | 06/26/89 |
| Arsenic | mg/kg | 1.3 | ND | 06/29/89 |
| Barium | mg/kg | 5.0 | 39 | 06/22/89 |
| Beryllium | mg/kg | 0.50 | ND | 07/07/89 |
| Cadmium | mg/kg | 0.25 | 0.42 | 06/21/89 |
| Calcium | mg/kg | 2.5 | 16300 | 07/06/89 |
| Chromium | mg/kg | 2.5 | 13 | 06/21/89 |
| Cobalt | mg/kg | 1.3 | 8.4 | 06/21/89 |
| Copper | mg/kg | 0.25 | 7.4 | 06/21/89 |
| Cyanide, Total | mg/kg | 0.50 | ND | 06/27/89 |
| Iron | mg/kg | 1.3 | 12200 | 06/20/89 |
| Lead | mg/kg | 2.5 | 5.7 | 06/20/89 |
| Magnesium | mg/kg | 2.5 | 7100 | 06/21/89 |
| Manganese | mg/kg | 0.25 | 380 | 06/20/89 |
| Mercury | mg/kg | 0.02 | ND | 06/16/89 |
| Nickel | mg/kg | 1.3 | 11 | 06/20/89 |
| Potassium | mg/kg | 2.5 | 240 | 06/23/89 |
| Selenium | mg/kg | 3.1 | ND | 07/05/89 |
| Silver | mg/kg | 4.0 | ND | 06/23/89 |
| Sodium | mg/kg | 2.5 | 56 | 06/23/89 |
| Thallium | mg/kg | 10 | ND | 07/05/89 |
| Vanadium | mg/kg | 13 | ND | 06/30/89 |
| Zinc | mg/kg | 2.5 | 17 | 06/21/89 |

MDL Method Detection Limit

ND Not detected at or above the MDL.



REPORT OF LABORATORY ANALYSIS

Offices:
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Mr. Dick Clute
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July 27, 1989
PACE Project Number: 890517201

PACE Sample Number: 194490

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Parameter Units MDL 9.0'-10.5' DATE ANALYZED

ORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| Moisture content | % | 1.0 | 8.1 | 07/06/89 |
|------------------|---|-----|-----|----------|
|------------------|---|-----|-----|----------|

MDL Method Detection Limit



REPORT OF LABORATORY ANALYSIS

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July 27, 1989
PACE Project Number: 890517201

PACE Sample Number: 194500

B-1

Parameter Units MDL 11.5-13.0' DATE ANALYZED

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|----------------|-------|------|-------|----------|
| Aluminum | mg/kg | 13 | 1500 | 06/21/89 |
| Antimony | mg/kg | 10 | 12 | 06/26/89 |
| Arsenic | mg/Kg | 1.3 | 2.9 | 06/29/89 |
| Barium | mg/kg | 10 | 22 | 06/22/89 |
| Beryllium | mg/kg | 0.50 | ND | 07/07/89 |
| Cadmium | mg/kg | 0.25 | 0.48 | 06/21/89 |
| | | | | |
| Calcium | mg/kg | 2.5 | 25700 | 07/06/89 |
| Chromium | mg/kg | 2.5 | 7.7 | 06/21/89 |
| Cobalt | mg/kg | 1.3 | 8.2 | 06/21/89 |
| Copper | mg/kg | 0.25 | 8.0 | 06/21/89 |
| Cyanide, Total | mg/kg | 0.50 | ND | 06/27/89 |
| Iron | mg/kg | 1.3 | 9600 | 06/20/89 |
| | | | | |
| Lead | mg/kg | 2.5 | 8.2 | 06/20/89 |
| Magnesium | mg/kg | 2.5 | 11800 | 06/21/89 |
| Manganese | mg/kg | 0.25 | 200 | 06/20/89 |
| Mercury | mg/kg | 0.02 | ND | 06/16/89 |
| Nickel | mg/kg | 1.3 | 8.6 | 06/20/89 |
| Potassium | mg/kg | 2.5 | 210 | 06/23/89 |
| | | | | |
| Selenium | mg/kg | 3.1 | ND | 07/05/89 |
| Silver | mg/kg | 4.0 | ND | 06/23/89 |
| Sodium | mg/kg | 2.5 | 38 | 06/23/89 |
| Thallium | mg/kg | 10 | ND | 07/05/89 |
| Vanadium | mg/kg | 13 | ND | 06/30/89 |
| Zinc | mg/Kg | 2.5 | 14 | 06/21/89 |

ORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|------------------|---|-----|-----|----------|
| Moisture content | % | 1.0 | 5.7 | 07/06/89 |
|------------------|---|-----|-----|----------|

MDL Method Detection Limit

ND Not detected at or above the MDL.



REPORT OF LABORATORY ANALYSIS

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Mr. Dick Clute
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July 27, 1989
PACE Project Number: 890517201

PACE Sample Number:

194510

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Parameter Units MDL 14.0-15.5' DATE ANALYZED

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|----------------|-------|------|-------|----------|
| Aluminum | mg/kg | 13 | 1500 | 06/21/89 |
| Antimony | mg/kg | 10 | 14 | 06/26/89 |
| Arsenic | mg/kg | 1.3 | 2.1 | 06/29/89 |
| Barium | mg/kg | 25 | 44 | 06/22/89 |
| Beryllium | mg/kg | 0.50 | ND | 07/07/89 |
| Cadmium | mg/kg | 0.25 | 0.50 | 06/21/89 |
| Calcium | mg/kg | 2.5 | 39000 | 07/06/89 |
| Chromium | mg/kg | 2.5 | 8.7 | 06/21/89 |
| Cobalt | mg/kg | 1.3 | 7.8 | 06/21/89 |
| Copper | mg/kg | 0.25 | 7.6 | 06/21/89 |
| Cyanide, Total | mg/kg | 0.50 | ND | 06/27/89 |
| Iron | mg/kg | 1.3 | 6700 | 06/20/89 |
| Lead | mg/kg | 2.5 | 8.6 | 06/20/89 |
| Magnesium | mg/kg | 2.5 | 9800 | 06/21/89 |
| Manganese | mg/kg | 0.25 | 170 | 06/20/89 |
| Mercury | mg/kg | 0.02 | ND | 06/16/89 |
| Nickel | mg/kg | 1.3 | 7.2 | 06/20/89 |
| Potassium | mg/kg | 2.5 | 200 | 06/23/89 |
| Selenium | mg/kg | 3.1 | ND | 07/05/89 |
| Silver | mg/kg | 4.0 | ND | 06/23/89 |
| Sodium | mg/kg | 2.5 | 39 | 06/23/89 |
| Thallium | mg/kg | 10 | ND | 07/05/89 |
| Vanadium | mg/kg | 13 | ND | 06/30/89 |
| Zinc | mg/kg | 2.5 | 12 | 06/21/89 |

ORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|------------------|---|-----|------|----------|
| Moisture content | % | 1.0 | 12.8 | 07/06/89 |
|------------------|---|-----|------|----------|

MDL Method Detection Limit

ND Not detected at or above the MDL.



REPORT OF LABORATORY ANALYSIS

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Mr. Dick Clute
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PACE Project Number: 890517201

PACE Sample Number: 194520

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Parameter Units MDL 16.5'18' DATE ANALYZED

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|----------------|-------|------|-------|----------|
| Aluminum | mg/kg | 13 | 1300 | 06/21/89 |
| Antimony | mg/kg | 10 | 15 | 06/26/89 |
| Arsenic | mg/kg | 1.3 | ND | 06/29/89 |
| Barium | mg/kg | 10 | 25 | 06/22/89 |
| Beryllium | mg/kg | 0.50 | ND | 07/07/89 |
| Cadmium | mg/kg | 0.25 | 0.32 | 06/26/89 |
| Calcium | mg/kg | 2.5 | 38300 | 07/06/89 |
| Chromium | mg/kg | 2.5 | 7.6 | 06/21/89 |
| Cobalt | mg/kg | 1.3 | 6.9 | 06/21/89 |
| Copper | mg/kg | 0.25 | 6.0 | 06/27/89 |
| Cyanide, Total | mg/kg | 0.50 | ND | 06/27/89 |
| Iron | mg/kg | 1.3 | 5400 | 07/10/89 |
| Lead | mg/kg | 2.5 | 8.0 | 06/26/89 |
| Magnesium | mg/kg | 2.5 | 11900 | 06/21/89 |
| Manganese | mg/kg | 0.25 | 190 | 07/10/89 |
| Mercury | mg/kg | 0.02 | ND | 06/16/89 |
| Nickel | mg/kg | 1.3 | 6.6 | 06/28/89 |
| Potassium | mg/kg | 2.5 | 160 | 06/23/89 |
| Selenium | mg/kg | 3.1 | ND | 07/05/89 |
| Silver | mg/kg | 4.0 | ND | 06/23/89 |
| Sodium | mg/kg | 2.5 | 42 | 06/23/89 |
| Thallium | mg/kg | 10 | ND | 07/05/89 |
| Vanadium | mg/kg | 13 | ND | 06/30/89 |
| Zinc | mg/kg | 2.5 | 9.4 | 06/28/89 |

ORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|------------------|---|-----|------|----------|
| Moisture content | % | 1.0 | 10.0 | 07/06/89 |
|------------------|---|-----|------|----------|

MDL Method Detection Limit

ND Not detected at or above the MDL.



REPORT OF LABORATORY ANALYSIS

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PACE Project Number: 890517201

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194520

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16.5'18' DATE ANALYZED

ORGANIC ANALYSIS

GCMS FOR VOLATILE ORGANICS-8240

| | | | | |
|-----------------------------|-------|-----|----|----------|
| Chloromethane | mg/kg | 0.6 | ND | 06/14/89 |
| Bromomethane | mg/kg | 1.0 | ND | 06/14/89 |
| Vinyl chloride | mg/kg | 0.7 | ND | 06/14/89 |
| Chloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Methylene chloride | mg/kg | 1.2 | ND | 06/14/89 |
| Acetone | mg/kg | 1.2 | ND | 06/14/89 |
| Carbon disulfide | mg/kg | 0.6 | ND | 06/14/89 |
| 1,1-Dichloroethylene | mg/kg | 0.7 | ND | 06/14/89 |
| 1,1-Dichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Trans-1,2-dichloroethylene | mg/kg | 0.5 | ND | 06/14/89 |
| Chloroform | mg/kg | 0.5 | ND | 06/14/89 |
| 1,2-Dichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| 2-Butanone (MEK) | mg/kg | 1.2 | ND | 06/14/89 |
| 1,1,1-Trichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Carbon tetrachloride | mg/kg | 0.5 | ND | 06/14/89 |
| Vinyl acetate | mg/kg | 1.2 | ND | 06/14/89 |
| Bromodichloromethane | mg/kg | 0.5 | ND | 06/14/89 |
| 1,1,2,2-Tetrachloroethane | mg/kg | 0.3 | ND | 06/14/89 |
| 1,2-Dichloropropane | mg/kg | 0.4 | ND | 06/14/89 |
| Trans-1,3-dichloropropene | mg/kg | 0.3 | ND | 06/14/89 |
| Trichloroethylene | mg/kg | 0.5 | ND | 06/14/89 |
| Dibromochloromethane | mg/kg | 0.4 | ND | 06/14/89 |
| 1,1,2-Trichloroethane | mg/kg | 0.4 | ND | 06/14/89 |
| Benzene | mg/kg | 0.3 | ND | 06/14/89 |
| Cis-1,3-dichloropropene | mg/kg | 0.3 | ND | 06/14/89 |
| 2-Chloroethylvinyl ether | mg/kg | 1.2 | ND | 06/14/89 |
| Bromoform | mg/kg | 0.5 | ND | 06/14/89 |
| 2-Hexanone | mg/kg | 1.2 | ND | 06/14/89 |
| 4-Methyl-2-pentanone (MIBK) | mg/kg | 1.2 | ND | 06/14/89 |
| Tetrachloroethylene | mg/kg | 1.0 | ND | 06/14/89 |

ND Not detected at or above the MDL.

MDL Method Detection Limit



REPORT OF LABORATORY ANALYSIS

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PACE Project Number: 890517201

PACE Sample Number:

194520

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Parameter Units MDL 16.5.18' DATE ANALYZED

ORGANIC ANALYSIS

GCMS FOR VOLATILE ORGANICS-8240

| | | | | |
|------------------|-------|-----|----|----------|
| Toluene | mg/kg | 0.5 | ND | 06/14/89 |
| Chlorobenzene | mg/kg | 0.4 | ND | 06/14/89 |
| Ethyl benzene | mg/kg | 0.5 | ND | 06/14/89 |
| Styrene | mg/kg | 0.6 | ND | 06/14/89 |
| Xylenes, (total) | mg/kg | 0.6 | ND | 06/14/89 |

ND Not detected at or above the MDL.
MDL Method Detection Limit



REPORT OF LABORATORY ANALYSIS

Mr. Dick Clute
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PACE Project Number: 890517201Offices:
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Leawood, Kansas

PACE Sample Number:

194530

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Parameter Units MDL 19-0-20.5 DATE ANALYZEDINORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|----------------|-------|------|-------|----------|
| Aluminum | mg/kg | 13 | 1400 | 06/21/89 |
| Antimony | mg/kg | 10 | 13 | 06/26/89 |
| Arsenic | mg/kg | 1.3 | ND | 06/29/89 |
| Barium | mg/kg | 25 | ND | 06/22/89 |
| Beryllium | mg/kg | 0.50 | ND | 07/07/89 |
| Cadmium | mg/kg | 0.25 | 0.28 | 06/26/89 |
| Calcium | mg/kg | 2.5 | 28300 | 07/06/89 |
| Chromium | mg/kg | 2.5 | 9.2 | 06/21/89 |
| Cobalt | mg/kg | 1.3 | 6.0 | 06/21/89 |
| Copper | mg/kg | 0.25 | 6.4 | 06/27/89 |
| Cyanide, Total | mg/kg | 0.50 | ND | 06/27/89 |
| Iron | mg/kg | 1.3 | 5300 | 07/10/89 |
| Lead | mg/kg | 2.5 | 7.3 | 06/26/89 |
| Magnesium | mg/kg | 2.5 | 8300 | 06/21/89 |
| Manganese | mg/kg | 0.25 | 340 | 07/10/89 |
| Mercury | mg/kg | 0.02 | ND | 06/16/89 |
| Nickel | mg/kg | 1.3 | 8.6 | 06/28/89 |
| Potassium | mg/kg | 2.5 | 220 | 06/23/89 |
| Selenium | mg/kg | 3.1 | ND | 07/05/89 |
| Silver | mg/kg | 4.0 | ND | 06/23/89 |
| Sodium | mg/kg | 2.5 | 40 | 06/23/89 |
| Thallium | mg/kg | 10 | ND | 07/05/89 |
| Vanadium | mg/kg | 13 | ND | 06/30/89 |
| Zinc | mg/kg | 2.5 | 10 | 06/28/89 |

ORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|------------------|---|-----|------|----------|
| Moisture content | % | 1.0 | 12.1 | 07/06/89 |
|------------------|---|-----|------|----------|

MDL Method Detection Limit

ND Not detected at or above the MDL.



REPORT OF LABORATORY ANALYSIS

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194530

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Parameter Units MDL 19-0-20-51 DATE ANALYZEDORGANIC ANALYSIS

GCMS FOR VOLATILE ORGANICS-8240

| | | | | |
|-----------------------------|-------|-----|----|----------|
| Chloromethane | mg/kg | 0.6 | ND | 06/14/89 |
| Bromomethane | mg/kg | 1.0 | ND | 06/14/89 |
| Vinyl chloride | mg/kg | 0.7 | ND | 06/14/89 |
| Chloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Methylene chloride | mg/kg | 1.2 | ND | 06/14/89 |
| Acetone | mg/kg | 1.2 | ND | 06/14/89 |
| Carbon disulfide | mg/kg | 0.6 | ND | 06/14/89 |
| 1,1-Dichloroethylene | mg/kg | 0.7 | ND | 06/14/89 |
| 1,1-Dichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Trans-1,2-dichloroethylene | mg/kg | 0.5 | ND | 06/14/89 |
| Chloroform | mg/kg | 0.5 | ND | 06/14/89 |
| 1,2-Dichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| 2-Butanone (MEK) | mg/kg | 1.2 | ND | 06/14/89 |
| 1,1,1-Trichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Carbon tetrachloride | mg/kg | 0.5 | ND | 06/14/89 |
| Vinyl acetate | mg/kg | 1.2 | ND | 06/14/89 |
| Bromodichloromethane | mg/kg | 0.5 | ND | 06/14/89 |
| 1,1,2,2-Tetrachloroethane | mg/kg | 0.3 | ND | 06/14/89 |
| 1,2-Dichloropropane | mg/kg | 0.4 | ND | 06/14/89 |
| Trans-1,3-dichloropropene | mg/kg | 0.3 | ND | 06/14/89 |
| Trichloroethylene | mg/kg | 0.5 | ND | 06/14/89 |
| Dibromochloromethane | mg/kg | 0.4 | ND | 06/14/89 |
| 1,1,2-Trichloroethane | mg/kg | 0.4 | ND | 06/14/89 |
| Benzene | mg/kg | 0.3 | ND | 06/14/89 |
| Cis-1,3-dichloropropene | mg/kg | 0.3 | ND | 06/14/89 |
| 2-Chloroethylvinyl ether | mg/kg | 1.2 | ND | 06/14/89 |
| Bromoform | mg/kg | 0.5 | ND | 06/14/89 |
| 2-Hexanone | mg/kg | 1.2 | ND | 06/14/89 |
| 4-Methyl-2-pentanone (MIBK) | mg/kg | 1.2 | ND | 06/14/89 |
| Tetrachloroethylene | mg/kg | 1.0 | ND | 06/14/89 |

ND Not detected at or above the MDL.
MDL Method Detection Limit



REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
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Mr. Dick Clute
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July 27, 1989
PACE Project Number: 890517201

PACE Sample Number: 194530

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Parameter Units MDL 19.0-20.5° DATE ANALYZED

ORGANIC ANALYSIS

GCMS FOR VOLATILE ORGANICS-8240

| | | | | |
|------------------|-------|-----|----|----------|
| Toluene | mg/kg | 0.5 | ND | 06/14/89 |
| Chlorobenzene | mg/kg | 0.4 | ND | 06/14/89 |
| Ethyl benzene | mg/kg | 0.5 | ND | 06/14/89 |
| Styrene | mg/kg | 0.6 | ND | 06/14/89 |
| Xylenes, (total) | mg/kg | 0.6 | ND | 06/14/89 |

ND Not detected at or above the MDL.
MDL Method Detection Limit



REPORT OF LABORATORY ANALYSIS

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July 27, 1989
PACE Project Number: 890517201

PACE Sample Number:

194540

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ParameterUnitsMDL

9'-10.5'

DATE ANALYZEDINORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|----------------|-------|------|-------|----------|
| Aluminum | mg/kg | 13 | 4900 | 06/21/89 |
| Antimony | mg/kg | 10 | 14 | 06/26/89 |
| Arsenic | mg/kg | 0.25 | 2.8 | 07/05/89 |
| Barium | mg/kg | 10 | 26 | 06/22/89 |
| Beryllium | mg/kg | 0.50 | ND | 07/07/89 |
| Cadmium | mg/kg | 0.25 | 0.45 | 06/26/89 |
| | | | | |
| Calcium | mg/kg | 2.5 | 15000 | 07/06/89 |
| Chromium | mg/kg | 2.5 | 16 | 06/21/89 |
| Cobalt | mg/kg | 1.3 | 9.6 | 06/21/89 |
| Copper | mg/kg | 0.25 | 14 | 06/27/89 |
| Cyanide, Total | mg/kg | 0.50 | ND | 06/27/89 |
| Iron | mg/kg | 1.3 | 10600 | 07/10/89 |
| | | | | |
| Lead | mg/kg | 2.5 | 11 | 06/26/89 |
| Magnesium | mg/kg | 2.5 | 7600 | 06/21/89 |
| Manganese | mg/kg | 0.25 | 360 | 07/10/89 |
| Mercury | mg/kg | 0.02 | ND | 06/16/89 |
| Nickel | mg/kg | 1.3 | 14 | 06/28/89 |
| Potassium | mg/kg | 2.5 | 400 | 06/23/89 |
| | | | | |
| Selenium | mg/kg | 3.1 | ND | 07/06/89 |
| Silver | mg/kg | 4.0 | ND | 06/23/89 |
| Sodium | mg/kg | 2.5 | 57 | 06/23/89 |
| Thallium | mg/kg | 10 | ND | 07/05/89 |
| Vanadium | mg/kg | 13 | ND | 06/30/89 |
| Zinc | mg/kg | 2.5 | 30 | 06/28/89 |

ORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|------------------|---|-----|-----|----------|
| Moisture content | % | 1.0 | 6.0 | 07/06/89 |
|------------------|---|-----|-----|----------|

MDL Method Detection Limit
ND Not detected at or above the MDL.



REPORT OF LABORATORY ANALYSIS

Offices:
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July 27, 1989
PACE Project Number: 890517201

PACE Sample Number:

194540

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ParameterUnitsMDL9'-10.5'DATE ANALYZEDORGANIC ANALYSIS

GCMS FOR VOLATILE ORGANICS-8240

| | | | | |
|-----------------------------|-------|-----|----|----------|
| Chloromethane | mg/kg | 0.6 | ND | 06/14/89 |
| Bromomethane | mg/kg | 1.0 | ND | 06/14/89 |
| Vinyl chloride | mg/kg | 0.7 | ND | 06/14/89 |
| Chloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Methylene chloride | mg/kg | 1.2 | ND | 06/14/89 |
| Acetone | mg/kg | 1.2 | ND | 06/14/89 |
| Carbon disulfide | mg/kg | 0.6 | ND | 06/14/89 |
| 1,1-Dichloroethylene | mg/kg | 0.7 | ND | 06/14/89 |
| 1,1-Dichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Trans-1,2-dichloroethylene | mg/kg | 0.5 | ND | 06/14/89 |
| Chloroform | mg/kg | 0.5 | ND | 06/14/89 |
| 1,2-Dichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| 2-Butanone (MEK) | mg/kg | 1.2 | ND | 06/14/89 |
| 1,1,1-Trichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Carbon tetrachloride | mg/kg | 0.5 | ND | 06/14/89 |
| Vinyl acetate | mg/kg | 1.2 | ND | 06/14/89 |
| Bromodichloromethane | mg/kg | 0.5 | ND | 06/14/89 |
| 1,1,2,2-Tetrachloroethane | mg/kg | 0.3 | ND | 06/14/89 |
| 1,2-Dichloropropane | mg/kg | 0.4 | ND | 06/14/89 |
| Trans-1,3-dichloropropene | mg/kg | 0.3 | ND | 06/14/89 |
| Trichloroethylene | mg/kg | 0.5 | ND | 06/14/89 |
| Dibromochloromethane | mg/kg | 0.4 | ND | 06/14/89 |
| 1,1,2-Trichloroethane | mg/kg | 0.4 | ND | 06/14/89 |
| Benzene | mg/kg | 0.3 | ND | 06/14/89 |
| Cis-1,3-dichloropropene | mg/kg | 0.3 | ND | 06/14/89 |
| 2-Chloroethylvinyl ether | mg/kg | 1.2 | ND | 06/14/89 |
| Bromoform | mg/kg | 0.5 | ND | 06/14/89 |
| 2-Hexanone | mg/kg | 1.2 | ND | 06/14/89 |
| 4-Methyl-2-pentanone (MIBK) | mg/kg | 1.2 | ND | 06/14/89 |
| Tetrachloroethylene | mg/kg | 1.0 | ND | 06/14/89 |

ND Not detected at or above the MDL.

MDL Method Detection Limit



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Parameter Units MDL 9'-10.5' DATE ANALYZED

ORGANIC ANALYSIS

GCMS FOR VOLATILE ORGANICS-8240

| | | | | |
|------------------|-------|-----|----|----------|
| Toluene | mg/kg | 0.5 | ND | 06/14/89 |
| Chlorobenzene | mg/kg | 0.4 | ND | 06/14/89 |
| Ethyl benzene | mg/kg | 0.5 | ND | 06/14/89 |
| Styrene | mg/kg | 0.6 | ND | 06/14/89 |
| Xylenes, (total) | mg/kg | 0.6 | ND | 06/14/89 |

ND Not detected at or above the MDL.
MDL Method Detection Limit



REPORT OF LABORATORY ANALYSIS

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PACE Project Number: 890517201

PACE Sample Number: 194550

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Parameter Units MDL 11.5'-13' DATE ANALYZED

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|----------------|-------|------|-------|----------|
| Aluminum | mg/kg | 13 | 4000 | 06/21/89 |
| Antimony | mg/kg | 10 | 18 | 06/26/89 |
| Arsenic | mg/kg | 0.25 | 1.6 | 07/05/89 |
| Barium | mg/kg | 25 | 76 | 06/22/89 |
| Beryllium | mg/kg | 0.50 | ND | 07/07/89 |
| Cadmium | mg/kg | 0.25 | 0.50 | 06/26/89 |
| Calcium | mg/kg | 2.5 | 41700 | 07/06/89 |
| Chromium | mg/kg | 2.5 | 12 | 06/21/89 |
| Cobalt | mg/kg | 1.3 | 12 | 06/21/89 |
| Copper | mg/kg | 0.25 | 17 | 06/27/89 |
| Cyanide, Total | mg/kg | 0.50 | ND | 06/27/89 |
| Iron | mg/kg | 1.3 | 10200 | 07/10/89 |
| Lead | mg/kg | 2.5 | 16 | 06/26/89 |
| Magnesium | mg/kg | 2.5 | 19000 | 06/21/89 |
| Manganese | mg/kg | 0.25 | 490 | 07/10/89 |
| Mercury | mg/kg | 0.02 | ND | 06/16/89 |
| Nickel | mg/kg | 1.3 | 12 | 06/28/89 |
| Potassium | mg/kg | 2.5 | 520 | 06/23/89 |
| Selenium | mg/kg | 3.1 | ND | 07/06/89 |
| Silver | mg/kg | 4.0 | ND | 06/23/89 |
| Sodium | mg/kg | 2.5 | 89 | 06/23/89 |
| Thallium | mg/kg | 10 | 12 | 07/05/89 |
| Vanadium | mg/kg | 13 | ND | 06/30/89 |
| Zinc | mg/kg | 2.5 | 25 | 06/28/89 |

ORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Moisture content % 1.0 7.6 07/06/89

MDL Method Detection Limit
ND Not detected at or above the MDL.

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194560

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Parameter Units MDL 14'-15.5' DATE ANALYZED

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|----------------|-------|------|-------|----------|
| Aluminum | mg/kg | 13 | 1100 | 06/21/89 |
| Antimony | mg/kg | 10 | 15 | 06/26/89 |
| Arsenic | mg/kg | 0.25 | 0.27 | 07/05/89 |
| Barium | mg/kg | 25 | ND | 06/22/89 |
| Beryllium | mg/kg | 0.50 | ND | 07/07/89 |
| Cadmium | mg/kg | 0.25 | ND | 06/26/89 |
| Calcium | mg/kg | 2.5 | 27100 | 07/06/89 |
| Chromium | mg/kg | 2.5 | 8.0 | 06/21/89 |
| Cobalt | mg/kg | 1.3 | 6.0 | 06/21/89 |
| Copper | mg/kg | 0.25 | 7.2 | 06/27/89 |
| Cyanide, Total | mg/kg | 0.50 | ND | 06/27/89 |
| Iron | mg/kg | 1.3 | 4100 | 07/10/89 |
| Lead | mg/kg | 2.5 | 7.0 | 06/26/89 |
| Magnesium | mg/kg | 2.5 | 9600 | 06/21/89 |
| Manganese | mg/kg | 0.25 | 170 | 07/10/89 |
| Mercury | mg/kg | 0.02 | ND | 06/16/89 |
| Nickel | mg/kg | 1.3 | 8.2 | 06/28/89 |
| Potassium | mg/kg | 2.5 | 130 | 06/23/89 |
| Selenium | mg/kg | 3.1 | ND | 07/06/89 |
| Silver | mg/kg | 4.0 | 15 | 06/23/89 |
| Sodium | mg/kg | 2.5 | 35 | 06/23/89 |
| Thallium | mg/kg | 10 | ND | 07/05/89 |
| Vanadium | mg/kg | 13 | ND | 06/30/89 |
| Zinc | mg/kg | 2.5 | 9.3 | 06/28/89 |

ORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|------------------|---|-----|-----|----------|
| Moisture content | % | 1.0 | 8.9 | 07/06/89 |
|------------------|---|-----|-----|----------|

MDL Method Detection Limit

ND Not detected at or above the MDL.

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PACE Sample Number:

194570

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| <u>Parameter</u> | <u>Units</u> | <u>MDL</u> | <u>16.5'-18'</u> | <u>DATE ANALYZED</u> |
|------------------|--------------|------------|------------------|----------------------|
|------------------|--------------|------------|------------------|----------------------|

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|----------------|-------|------|-------|----------|
| Aluminum | mg/kg | 13 | 2700 | 06/21/89 |
| Antimony | mg/kg | 10 | 18 | 06/26/89 |
| Arsenic | mg/kg | 0.25 | 0.94 | 07/05/89 |
| Barium | mg/kg | 25 | ND | 06/22/89 |
| Beryllium | mg/kg | 0.50 | ND | 07/07/89 |
| Cadmium | mg/kg | 0.25 | 0.35 | 06/26/89 |
| | | | | |
| Calcium | mg/kg | 2.5 | 51500 | 07/06/89 |
| Chromium | mg/kg | 2.5 | 16 | 06/21/89 |
| Cobalt | mg/kg | 1.3 | 10 | 06/21/89 |
| Copper | mg/kg | 0.25 | 9.6 | 06/27/89 |
| Cyanide, Total | mg/kg | 0.50 | ND | 06/27/89 |
| Iron | mg/kg | 1.3 | 9100 | 07/10/89 |
| | | | | |
| Lead | mg/kg | 2.5 | 11 | 06/26/89 |
| Magnesium | mg/kg | 2.5 | 13200 | 06/21/89 |
| Manganese | mg/kg | 0.25 | 260 | 07/10/89 |
| Mercury | mg/kg | 0.02 | ND | 06/16/89 |
| Nickel | mg/kg | 1.3 | 15 | 06/28/89 |
| Potassium | mg/kg | 2.5 | 220 | 06/23/89 |
| | | | | |
| Selenium | mg/kg | 3.1 | ND | 07/06/89 |
| Silver | mg/kg | 4.0 | ND | 06/23/89 |
| Sodium | mg/kg | 2.5 | 48 | 06/23/89 |
| Thallium | mg/kg | 10 | ND | 07/05/89 |
| Vanadium | mg/kg | 13 | ND | 06/30/89 |
| Zinc | mg/kg | 2.5 | 22 | 06/28/89 |

ORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|------------------|---|-----|------|----------|
| Moisture content | % | 1.0 | 13.3 | 07/06/89 |
|------------------|---|-----|------|----------|

MDL Method Detection Limit
 ND Not detected at or above the MDL.



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PACE Project Number: 890517201

PACE Sample Number:

194580

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Parameter

Units

MDL

19'-20.5'

DATE ANALYZED

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|----------------|-------|------|-------|----------|
| Aluminum | mg/kg | 13 | 810 | 06/21/89 |
| Antimony | mg/kg | 10 | ND | 06/26/89 |
| Arsenic | mg/kg | 0.25 | ND | 07/05/89 |
| Barium | mg/kg | 5.0 | 17 | 06/22/89 |
| Beryllium | mg/kg | 0.50 | ND | 07/07/89 |
| Cadmium | mg/kg | 0.25 | ND | 06/26/89 |
| Calcium | mg/kg | 2.5 | 23600 | 07/06/89 |
| Chromium | mg/kg | 2.5 | 8.2 | 06/21/89 |
| Cobalt | mg/kg | 1.3 | 4.9 | 06/21/89 |
| Copper | mg/kg | 0.25 | 5.2 | 06/27/89 |
| Cyanide, Total | mg/kg | 0.50 | ND | 06/27/89 |
| Iron | mg/kg | 1.3 | 3300 | 07/10/89 |
| Lead | mg/kg | 2.5 | 5.4 | 06/26/89 |
| Magnesium | mg/kg | 2.5 | 5500 | 07/11/89 |
| Manganese | mg/kg | 0.25 | 150 | 07/10/89 |
| Mercury | mg/kg | 0.02 | ND | 06/16/89 |
| Nickel | mg/kg | 1.3 | 6.3 | 06/28/89 |
| Potassium | mg/kg | 2.5 | 120 | 06/23/89 |
| Selenium | mg/kg | 3.1 | ND | 07/06/89 |
| Silver | mg/kg | 4.0 | ND | 06/23/89 |
| Sodium | mg/kg | 2.5 | 44 | 06/23/89 |
| Thallium | mg/kg | 10 | ND | 07/05/89 |
| Vanadium | mg/kg | 13 | ND | 06/30/89 |
| Zinc | mg/kg | 2.5 | 7.7 | 06/28/89 |

ORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|------------------|---|-----|------|----------|
| Moisture content | % | 1.0 | 10.7 | 07/06/89 |
|------------------|---|-----|------|----------|

MDL Method Detection Limit

ND Not detected at or above the MDL.

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PACE Sample Number:

194580

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| <u>Parameter</u> | <u>Units</u> | <u>MDL</u> | <u>19'-20.5'</u> | <u>DATE ANALYZED</u> |
|------------------|--------------|------------|------------------|----------------------|
|------------------|--------------|------------|------------------|----------------------|

ORGANIC ANALYSIS

GCMS FOR VOLATILE ORGANICS-8240

| | | | | |
|-----------------------------|-------|-----|----|----------|
| Chloromethane | mg/kg | 0.6 | ND | 06/14/89 |
| Bromomethane | mg/kg | 1.0 | ND | 06/14/89 |
| Vinyl chloride | mg/kg | 0.7 | ND | 06/14/89 |
| Chloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Methylene chloride | mg/kg | 1.2 | ND | 06/14/89 |
| Acetone | mg/kg | 1.2 | ND | 06/14/89 |
| Carbon disulfide | mg/kg | 0.6 | ND | 06/14/89 |
| 1,1-Dichloroethylene | mg/kg | 0.7 | ND | 06/14/89 |
| 1,1-Dichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Trans-1,2-dichloroethylene | mg/kg | 0.5 | ND | 06/14/89 |
| Chloroform | mg/kg | 0.5 | ND | 06/14/89 |
| 1,2-Dichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| 2-Butanone (MEK) | mg/kg | 1.2 | ND | 06/14/89 |
| 1,1,1-Trichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Carbon tetrachloride | mg/kg | 0.5 | ND | 06/14/89 |
| Vinyl acetate | mg/kg | 1.2 | ND | 06/14/89 |
| Bromodichloromethane | mg/kg | 0.5 | ND | 06/14/89 |
| 1,1,2,2-Tetrachloroethane | mg/kg | 0.3 | ND | 06/14/89 |
| 1,2-Dichloropropane | mg/kg | 0.4 | ND | 06/14/89 |
| Trans-1,3-dichloropropene | mg/kg | 0.3 | ND | 06/14/89 |
| Trichloroethylene | mg/kg | 0.5 | ND | 06/14/89 |
| Dibromochloromethane | mg/kg | 0.4 | ND | 06/14/89 |
| 1,1,2-Trichloroethane | mg/kg | 0.4 | ND | 06/14/89 |
| Benzene | mg/kg | 0.3 | ND | 06/14/89 |
| Cis-1,3-dichloropropene | mg/kg | 0.3 | ND | 06/14/89 |
| 2-Chloroethylvinyl ether | mg/kg | 1.2 | ND | 06/14/89 |
| Bromoform | mg/kg | 0.5 | ND | 06/14/89 |
| 2-Hexanone | mg/kg | 1.2 | ND | 06/14/89 |
| 4-Methyl-2-pentanone (MIBK) | mg/kg | 1.2 | ND | 06/14/89 |
| Tetrachloroethylene | mg/kg | 1.0 | ND | 06/14/89 |

ND Not detected at or above the MDL.

MDL Method Detection Limit



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PACE Project Number: 890517201

PACE Sample Number: 194580

Parameter Units MDL 19'-20.5' DATE ANALYZED

ORGANIC ANALYSIS

GCMS FOR VOLATILE ORGANICS-8240

| | | | | |
|------------------|-------|-----|----|----------|
| Toluene | mg/kg | 0.5 | ND | 06/14/89 |
| Chlorobenzene | mg/kg | 0.4 | ND | 06/14/89 |
| Ethyl benzene | mg/kg | 0.5 | ND | 06/14/89 |
| Styrene | mg/kg | 0.6 | ND | 06/14/89 |
| Xylenes, (total) | mg/kg | 0.6 | ND | 06/14/89 |

ND Not detected at or above the MDL.

MDL Method Detection Limit



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Parameter Units MDL 20.5'-22' DATE ANALYZED

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|----------------|-------|------|------|----------|
| Aluminum | mg/kg | 13 | 3900 | 06/21/89 |
| Antimony | mg/kg | 10 | 14 | 06/26/89 |
| Arsenic | mg/kg | 0.25 | 1.3 | 07/05/89 |
| Barium | mg/kg | 5.0 | 36 | 06/22/89 |
| Beryllium | mg/kg | 0.50 | ND | 07/07/89 |
| Cadmium | mg/kg | 0.25 | 0.28 | 06/26/89 |
| | | | | |
| Calcium | mg/kg | 2.5 | 9000 | 07/06/89 |
| Chromium | mg/kg | 2.5 | 14 | 06/21/89 |
| Cobalt | mg/kg | 1.3 | 8.4 | 06/21/89 |
| Copper | mg/kg | 0.25 | 14 | 06/27/89 |
| Cyanide, Total | mg/kg | 0.50 | ND | 06/27/89 |
| Iron | mg/kg | 1.3 | 9800 | 07/10/89 |
| | | | | |
| Lead | mg/kg | 2.5 | 7.1 | 06/26/89 |
| Magnesium | mg/kg | 2.5 | 4200 | 06/21/89 |
| Manganese | mg/kg | 0.25 | 240 | 07/10/89 |
| Mercury | mg/kg | 0.02 | ND | 06/16/89 |
| Nickel | mg/kg | 1.3 | 12 | 06/28/89 |
| Potassium | mg/kg | 2.5 | 1400 | 06/23/89 |
| | | | | |
| Selenium | mg/kg | 3.1 | ND | 07/06/89 |
| Silver | mg/kg | 4.0 | ND | 06/23/89 |
| Sodium | mg/kg | 2.5 | 83 | 06/23/89 |
| Thallium | mg/kg | 10 | ND | 07/05/89 |
| Vanadium | mg/kg | 13 | ND | 06/30/89 |
| Zinc | mg/kg | 2.5 | 21 | 06/28/89 |

ORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|------------------|---|-----|-----|----------|
| Moisture content | % | 1.0 | 8.8 | 07/06/89 |
|------------------|---|-----|-----|----------|

MDL Method Detection Limit

ND Not detected at or above the MDL.



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PACE Sample Number:

194610

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9'-10.5'

DATE ANALYZED

Parameter

Units

MDL

INORGANIC ANALYSISINDIVIDUAL PARAMETERS

| | | | | |
|----------------|-------|------|-------|----------|
| Aluminum | mg/kg | 13 | 2100 | 06/21/89 |
| Antimony | mg/kg | 10 | 16 | 06/26/89 |
| Arsenic | mg/kg | 0.25 | 2.7 | 07/05/89 |
| Barium | mg/kg | 5.0 | 24 | 06/22/89 |
| Beryllium | mg/kg | 0.50 | ND | 07/07/89 |
| Cadmium | mg/kg | 0.25 | 0.30 | 06/26/89 |
| Calcium | mg/kg | 2.5 | 27200 | 07/06/89 |
| Chromium | mg/kg | 2.5 | 7.0 | 06/21/89 |
| Cobalt | mg/kg | 1.3 | 9.3 | 06/21/89 |
| Copper | mg/kg | 0.25 | 9.7 | 06/27/89 |
| Cyanide, Total | mg/kg | 0.50 | ND | 06/27/89 |
| Iron | mg/kg | 1.3 | 10500 | 07/10/89 |
| Lead | mg/kg | 2.5 | 8.6 | 06/26/89 |
| Magnesium | mg/kg | 2.5 | 9500 | 06/21/89 |
| Manganese | mg/kg | 0.25 | 390 | 07/10/89 |
| Mercury | mg/kg | 0.02 | ND | 06/22/89 |
| Nickel | mg/kg | 1.3 | 10 | 06/28/89 |
| Potassium | mg/kg | 2.5 | 250 | 06/23/89 |
| Selenium | mg/kg | 3.1 | ND | 07/06/89 |
| Silver | mg/kg | 4.0 | ND | 06/23/89 |
| Sodium | mg/kg | 2.5 | 36 | 06/23/89 |
| Thallium | mg/kg | 10 | ND | 07/05/89 |
| Vanadium | mg/kg | 13 | ND | 06/30/89 |
| Zinc | mg/kg | 2.5 | 18 | 06/28/89 |

ORGANIC ANALYSISINDIVIDUAL PARAMETERS

| | | | | |
|------------------|---|-----|-----|----------|
| Moisture content | % | 1.0 | 4.1 | 07/06/89 |
|------------------|---|-----|-----|----------|

MDL Method Detection Limit

ND Not detected at or above the MDL.



REPORT OF LABORATORY ANALYSIS

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PACE Project Number: 890517201

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Parameter Units MDL 11-5'-13' DATE ANALYZED

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|----------------|-------|------|-------|----------|
| Aluminum | mg/kg | 13 | 1200 | 06/21/89 |
| Antimony | mg/kg | 10 | ND | 06/26/89 |
| Arsenic | mg/kg | 0.25 | ND | 07/05/89 |
| Barium | mg/kg | 5.0 | 12 | 06/22/89 |
| Beryllium | mg/kg | 0.50 | ND | 07/07/89 |
| Cadmium | mg/kg | 0.25 | ND | 06/26/89 |
| | | | | |
| Calcium | mg/kg | 2.5 | 22800 | 07/06/89 |
| Chromium | mg/kg | 2.5 | 6.0 | 06/21/89 |
| Cobalt | mg/kg | 1.3 | 7.6 | 06/21/89 |
| Copper | mg/kg | 0.25 | 4.5 | 06/27/89 |
| Cyanide, Total | mg/kg | 0.50 | ND | 06/27/89 |
| Iron | mg/kg | 1.3 | 7500 | 07/10/89 |
| | | | | |
| Lead | mg/kg | 2.5 | 6.7 | 06/26/89 |
| Magnesium | mg/kg | 2.5 | 12800 | 06/21/89 |
| Manganese | mg/kg | 0.25 | 82 | 07/10/89 |
| Mercury | mg/kg | 0.02 | ND | 06/22/89 |
| Nickel | mg/kg | 1.3 | 7.6 | 06/28/89 |
| Potassium | mg/kg | 2.5 | 170 | 07/05/89 |
| | | | | |
| Selenium | mg/kg | 3.1 | ND | 07/06/89 |
| Silver | mg/kg | 4.0 | ND | 06/23/89 |
| Sodium | mg/kg | 2.5 | 120 | 06/23/89 |
| Thallium | mg/kg | 10 | ND | 07/05/89 |
| Vanadium | mg/kg | 13 | ND | 06/30/89 |
| Zinc | mg/kg | 2.5 | 11 | 06/28/89 |

ORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|------------------|---|-----|-----|----------|
| Moisture content | % | 1.0 | 4.4 | 07/06/89 |
|------------------|---|-----|-----|----------|

MDL Method Detection Limit
ND Not detected at or above the MDL.



REPORT OF LABORATORY ANALYSIS

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Parameter Units MDL 14-'-15.5' DATE ANALYZED

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|----------------|-------|------|-------|----------|
| Aluminum | mg/kg | 13 | 1700 | 06/21/89 |
| Antimony | mg/kg | 10 | 12 | 06/26/89 |
| Arsenic | mg/kg | 0.25 | 0.44 | 07/05/89 |
| Barium | mg/kg | 5.0 | 14 | 06/22/89 |
| Beryllium | mg/kg | 0.50 | ND | 07/07/89 |
| Cadmium | mg/kg | 0.25 | ND | 06/26/89 |
| Calcium | mg/kg | 2.5 | 20600 | 07/06/89 |
| Chromium | mg/kg | 2.5 | 8.1 | 06/21/89 |
| Cobalt | mg/kg | 1.3 | 7.6 | 06/21/89 |
| Copper | mg/kg | 0.25 | 6.5 | 06/27/89 |
| Cyanide, Total | mg/kg | 0.50 | ND | 06/27/89 |
| Iron | mg/kg | 1.3 | 7100 | 07/10/89 |
| Lead | mg/kg | 2.5 | 6.2 | 06/26/89 |
| Magnesium | mg/kg | 2.5 | 9600 | 06/21/89 |
| Manganese | mg/kg | 0.25 | 120 | 07/10/89 |
| Mercury | mg/kg | 0.02 | 0.03 | 06/22/89 |
| Nickel | mg/kg | 1.3 | 8.3 | 06/28/89 |
| Potassium | mg/kg | 2.5 | 210 | 06/23/89 |
| Selenium | mg/kg | 3.1 | ND | 07/06/89 |
| Silver | mg/kg | 4.0 | ND | 06/23/89 |
| Sodium | mg/kg | 2.5 | 52 | 06/23/89 |
| Thallium | mg/kg | 10 | ND | 07/05/89 |
| Vanadium | mg/kg | 13 | ND | 06/30/89 |
| Zinc | mg/kg | 2.5 | 18 | 06/28/89 |

ORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Moisture content % 1.0 10.4 07/06/89

MDL Method Detection Limit

ND Not detected at or above the MDL.

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Leawood, Kansas

PACE Sample Number: 194640
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| <u>Parameter</u> | <u>Units</u> | <u>MDL</u> | <u>16.5'-18'</u> | <u>DATE ANALYZED</u> |
|------------------|--------------|------------|------------------|----------------------|
|------------------|--------------|------------|------------------|----------------------|

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|----------------|-------|------|-------|----------|
| Aluminum | mg/kg | 13 | 3500 | 06/21/89 |
| Antimony | mg/kg | 10 | 11 | 06/26/89 |
| Arsenic | mg/kg | 0.25 | 0.69 | 07/05/89 |
| Barium | mg/kg | 5.0 | 6.5 | 06/22/89 |
| Beryllium | mg/kg | 0.50 | ND | 07/07/89 |
| Cadmium | mg/kg | 0.25 | 0.32 | 06/26/89 |
| | | | | |
| Calcium | mg/kg | 2.5 | 16200 | 07/06/89 |
| Chromium | mg/kg | 2.5 | 11 | 06/21/89 |
| Cobalt | mg/kg | 1.3 | 12 | 06/21/89 |
| Copper | mg/kg | 0.25 | 8.7 | 06/27/89 |
| Cyanide, Total | mg/kg | 0.50 | ND | 06/27/89 |
| Iron | mg/kg | 1.3 | 14700 | 07/10/89 |
| | | | | |
| Lead | mg/kg | 2.5 | 6.2 | 06/26/89 |
| Magnesium | mg/kg | 2.5 | 10600 | 06/21/89 |
| Manganese | mg/kg | 0.25 | 120 | 07/10/89 |
| Mercury | mg/kg | 0.02 | ND | 06/22/89 |
| Nickel | mg/kg | 1.3 | 13 | 06/28/89 |
| Potassium | mg/kg | 2.5 | 260 | 06/23/89 |
| | | | | |
| Selenium | mg/kg | 3.1 | ND | 07/06/89 |
| Silver | mg/kg | 4.0 | ND | 06/23/89 |
| Sodium | mg/kg | 2.5 | 100 | 06/23/89 |
| Thallium | mg/kg | 10 | ND | 07/05/89 |
| Vanadium | mg/kg | 13 | ND | 06/30/89 |
| Zinc | mg/kg | 2.5 | 20 | 06/28/89 |

ORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|------------------|---|-----|------|----------|
| Moisture content | % | 1.0 | 18.5 | 07/06/89 |
|------------------|---|-----|------|----------|

MDL Method Detection Limit
ND Not detected at or above the MDL.

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 PACE Project Number: 890517201

PACE Sample Number: 194650

Parameter Units MDL 19'-20.5' DATE ANALYZED

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|----------------|-------|------|------|----------|
| Aluminum | mg/kg | 13 | 2000 | 06/21/89 |
| Antimony | mg/kg | 10 | 12 | 06/26/89 |
| Arsenic | mg/kg | 0.25 | 0.28 | 07/05/89 |
| Barium | mg/kg | 5.0 | 12 | 06/22/89 |
| Beryllium | mg/kg | 0.50 | ND | 07/07/89 |
| Cadmium | mg/kg | 0.25 | ND | 06/26/89 |
| Calcium | mg/kg | 2.5 | 7400 | 07/06/89 |
| Chromium | mg/kg | 2.5 | 8.8 | 06/21/89 |
| Cobalt | mg/kg | 1.3 | 7.2 | 06/21/89 |
| Copper | mg/kg | 0.25 | 7.7 | 06/27/89 |
| Cyanide, Total | mg/kg | 0.50 | ND | 06/27/89 |
| Iron | mg/kg | 1.3 | 8000 | 07/10/89 |
| Lead | mg/kg | 2.5 | 4.8 | 06/26/89 |
| Magnesium | mg/kg | 2.5 | 4800 | 06/21/89 |
| Manganese | mg/kg | 0.25 | 90 | 07/10/89 |
| Mercury | mg/kg | 0.02 | ND | 06/22/89 |
| Nickel | mg/kg | 1.3 | 8.5 | 06/28/89 |
| Potassium | mg/kg | 2.5 | 150 | 06/23/89 |
| Selenium | mg/kg | 3.1 | ND | 07/06/89 |
| Silver | mg/kg | 4.0 | ND | 06/23/89 |
| Sodium | mg/kg | 2.5 | 110 | 06/23/89 |
| Thallium | mg/kg | 10 | ND | 07/05/89 |
| Vanadium | mg/kg | 13 | ND | 06/30/89 |
| Zinc | mg/kg | 2.5 | 15 | 06/28/89 |

ORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|------------------|---|-----|------|----------|
| Moisture content | % | 1.0 | 15.9 | 07/24/89 |
|------------------|---|-----|------|----------|

MDL Method Detection Limit

ND Not detected at or above the MDL.



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Parameter Units MDL 215'-23' DATE ANALYZED

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|----------------|-------|------|-------|----------|
| Aluminum | mg/kg | 13 | 1300 | 06/21/89 |
| Antimony | mg/kg | 10 | 12 | 06/26/89 |
| Arsenic | mg/kg | 0.25 | ND | 07/05/89 |
| Barium | mg/kg | 5.0 | 19 | 06/22/89 |
| Beryllium | mg/kg | 0.50 | ND | 07/07/89 |
| Cadmium | mg/kg | 0.25 | 0.28 | 06/26/89 |
| Calcium | mg/kg | 2.5 | 23600 | 07/06/89 |
| Chromium | mg/kg | 2.5 | 8.8 | 06/21/89 |
| Cobalt | mg/kg | 1.3 | 7.6 | 06/21/89 |
| Copper | mg/kg | 0.25 | 7.0 | 06/27/89 |
| Cyanide, Total | mg/kg | 0.50 | ND | 06/29/89 |
| Iron | mg/kg | 1.3 | 6900 | 07/10/89 |
| Lead | mg/kg | 2.5 | 6.1 | 06/26/89 |
| Magnesium | mg/kg | 2.5 | 9500 | 06/21/89 |
| Manganese | mg/kg | 0.25 | 210 | 07/10/89 |
| Mercury | mg/kg | 0.02 | ND | 06/22/89 |
| Nickel | mg/kg | 1.3 | 7.9 | 06/28/89 |
| Potassium | mg/kg | 2.5 | 210 | 06/23/89 |
| Selenium | mg/kg | 3.1 | ND | 07/06/89 |
| Silver | mg/kg | 4.0 | ND | 06/23/89 |
| Sodium | mg/kg | 2.5 | 98 | 06/23/89 |
| Thallium | mg/kg | 10 | ND | 07/05/89 |
| Vanadium | mg/kg | 13 | ND | 06/30/89 |
| Zinc | mg/kg | 2.5 | 11 | 06/28/89 |

ORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Moisture content % 1.0 11.1 07/06/89

MDL Method Detection Limit

ND Not detected at or above the MDL.



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| PAGE Sample Number: | | | 194660 | |
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| <u>Parameter</u> | <u>Units</u> | <u>MDL</u> | 21.5'-23' | <u>DATE ANALYZED</u> |
| <u>ORGANIC ANALYSIS</u> | | | | |
| GCMS FOR VOLATILE ORGANICS-8240 | | | | |
| Chloromethane | mg/kg | 0.6 | ND | 06/14/89 |
| Bromomethane | mg/kg | 1.0 | ND | 06/14/89 |
| Vinyl chloride | mg/kg | 0.7 | ND | 06/14/89 |
| Chloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Methylene chloride | mg/kg | 1.2 | ND | 06/14/89 |
| Acetone | mg/kg | 1.2 | ND | 06/14/89 |
| Carbon disulfide | mg/kg | 0.6 | ND | 06/14/89 |
| 1,1-Dichloroethylene | mg/kg | 0.7 | ND | 06/14/89 |
| 1,1-Dichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Trans-1,2-dichloroethylene | mg/kg | 0.5 | ND | 06/14/89 |
| Chloroform | mg/kg | 0.5 | ND | 06/14/89 |
| 1,2-Dichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| 2-Butanone (MEK) | mg/kg | 1.2 | ND | 06/14/89 |
| 1,1,1-Trichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Carbon tetrachloride | mg/kg | 0.5 | ND | 06/14/89 |
| Vinyl acetate | mg/kg | 1.2 | ND | 06/14/89 |
| Bromodichloromethane | mg/kg | 0.5 | ND | 06/14/89 |
| 1,1,2,2-Tetrachloroethane | mg/kg | 0.3 | ND | 06/14/89 |
| 1,2-Dichloropropane | mg/kg | 0.4 | ND | 06/14/89 |
| Trans-1,3-dichloropropene | mg/kg | 0.3 | ND | 06/14/89 |
| Trichloroethylene | mg/kg | 0.5 | ND | 06/14/89 |
| Dibromochloromethane | mg/kg | 0.4 | ND | 06/14/89 |
| 1,1,2-Trichloroethane | mg/kg | 0.4 | ND | 06/14/89 |
| Benzene | mg/kg | 0.3 | ND | 06/14/89 |
| Cis-1,3-dichloropropene | mg/kg | 0.3 | ND | 06/14/89 |
| 2-Chloroethylvinyl ether | mg/kg | 1.2 | ND | 06/14/89 |
| Bromoform | mg/kg | 0.5 | ND | 06/14/89 |
| 2-Hexanone | mg/kg | 1.2 | ND | 06/14/89 |
| 4-Methyl-2-pentanone (MIBK) | mg/kg | 1.2 | ND | 06/14/89 |
| Tetrachloroethylene | mg/kg | 1.0 | ND | 06/14/89 |

ND Not detected at or above the MDL.
MDL Method Detection Limit



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PACE Sample Number: 194660

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Parameter Units MDL 21.5'-23' DATE ANALYZED

ORGANIC ANALYSIS

GCMS FOR VOLATILE ORGANICS-8240

| | | | | |
|------------------|-------|-----|----|----------|
| Toluene | mg/kg | 0.5 | ND | 06/14/89 |
| Chlorobenzene | mg/kg | 0.4 | ND | 06/14/89 |
| Ethyl benzene | mg/kg | 0.5 | ND | 06/14/89 |
| Styrene | mg/kg | 0.6 | ND | 06/14/89 |
| Xylenes, (total) | mg/kg | 0.6 | ND | 06/14/89 |

ND Not detected at or above the MDL.

MDL Method Detection Limit



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PACE Sample Number: 194670

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Parameter Units MDL 24'-25.5' DATE ANALYZED

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|----------------|-------|------|-------|----------|
| Aluminum | mg/kg | 13 | 1300 | 06/21/89 |
| Antimony | mg/kg | 10 | 11 | 06/26/89 |
| Arsenic | mg/kg | 0.25 | ND | 07/05/89 |
| Barium | mg/kg | 5.0 | 24 | 06/22/89 |
| Beryllium | mg/kg | 0.50 | ND | 07/07/89 |
| Cadmium | mg/kg | 0.25 | ND | 06/26/89 |
| Calcium | mg/kg | 2.5 | 24000 | 07/06/89 |
| Chromium | mg/kg | 2.5 | 5.7 | 06/21/89 |
| Cobalt | mg/kg | 1.3 | 5.9 | 06/21/89 |
| Copper | mg/kg | 0.25 | 5.4 | 06/27/89 |
| Cyanide, Total | mg/kg | 0.50 | ND | 06/29/89 |
| Iron | mg/kg | 1.3 | 5200 | 07/10/89 |
| Lead | mg/kg | 2.5 | 5.9 | 06/26/89 |
| Magnesium | mg/kg | 2.5 | 8600 | 06/21/89 |
| Manganese | mg/kg | 0.25 | 250 | 07/10/89 |
| Mercury | mg/kg | 0.02 | ND | 06/22/89 |
| Nickel | mg/kg | 1.3 | 7.0 | 06/28/89 |
| Potassium | mg/kg | 2.5 | 190 | 06/23/89 |
| Selenium | mg/kg | 3.1 | ND | 07/06/89 |
| Silver | mg/kg | 4.0 | ND | 06/23/89 |
| Sodium | mg/kg | 2.5 | 93 | 06/23/89 |
| Thallium | mg/kg | 10 | ND | 07/05/89 |
| Vanadium | mg/kg | 13 | ND | 06/30/89 |
| Zinc | mg/kg | 2.5 | 10 | 06/28/89 |

ORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|------------------|---|-----|------|----------|
| Moisture content | % | 1.0 | 10.5 | 07/06/89 |
|------------------|---|-----|------|----------|

MDL Method Detection Limit

ND Not detected at or above the MDL.

REPORT OF LABORATORY ANALYSIS

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Parameter Units MDL 24'-25.5' DATE ANALYZED

ORGANIC ANALYSIS

GCMS FOR VOLATILE ORGANICS-8240

| | | | | |
|-----------------------------|-------|-----|----|----------|
| Chloromethane | mg/kg | 0.6 | ND | 06/14/89 |
| Bromomethane | mg/kg | 1.0 | ND | 06/14/89 |
| Vinyl chloride | mg/kg | 0.7 | ND | 06/14/89 |
| Chloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Methylene chloride | mg/kg | 1.2 | ND | 06/14/89 |
| Acetone | mg/kg | 1.2 | ND | 06/14/89 |
| Carbon disulfide | mg/kg | 0.6 | ND | 06/14/89 |
| 1,1-Dichloroethylene | mg/kg | 0.7 | ND | 06/14/89 |
| 1,1-Dichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Trans-1,2-dichloroethylene | mg/kg | 0.5 | ND | 06/14/89 |
| Chloroform | mg/kg | 0.5 | ND | 06/14/89 |
| 1,2-Dichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| 2-Butanone (MEK) | mg/kg | 1.2 | ND | 06/14/89 |
| 1,1,1-Trichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Carbon tetrachloride | mg/kg | 0.5 | ND | 06/14/89 |
| Vinyl acetate | mg/kg | 1.2 | ND | 06/14/89 |
| Bromodichloromethane | mg/kg | 0.5 | ND | 06/14/89 |
| 1,1,2,2-Tetrachloroethane | mg/kg | 0.3 | ND | 06/14/89 |
| 1,2-Dichloropropane | mg/kg | 0.4 | ND | 06/14/89 |
| Trans-1,3-dichloropropene | mg/kg | 0.3 | ND | 06/14/89 |
| Trichloroethylene | mg/kg | 0.5 | ND | 06/14/89 |
| Dibromochloromethane | mg/kg | 0.4 | ND | 06/14/89 |
| 1,1,2-Trichloroethane | mg/kg | 0.4 | ND | 06/14/89 |
| Benzene | mg/kg | 0.3 | ND | 06/14/89 |
| Cis-1,3-dichloropropene | mg/kg | 0.3 | ND | 06/14/89 |
| 2-Chloroethylvinyl ether | mg/kg | 1.2 | ND | 06/14/89 |
| Bromoform | mg/kg | 0.5 | ND | 06/14/89 |
| 2-Hexanone | mg/kg | 1.2 | ND | 06/14/89 |
| 4-Methyl-2-pentanone (MIBK) | mg/kg | 1.2 | ND | 06/14/89 |
| Tetrachloroethylene | mg/kg | 1.0 | ND | 06/14/89 |

ND Not detected at or above the MDL.

MDL Method Detection Limit



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PACE Sample Number: 194670

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Parameter Units MDL 24'-25.5' DATE ANALYZED

ORGANIC ANALYSIS

GCMS FOR VOLATILE ORGANICS-8240

| | | | | |
|------------------|-------|-----|----|----------|
| Toluene | mg/kg | 0.5 | ND | 06/14/89 |
| Chlorobenzene | mg/kg | 0.4 | ND | 06/14/89 |
| Ethyl benzene | mg/kg | 0.5 | ND | 06/14/89 |
| Styrene | mg/kg | 0.6 | ND | 06/14/89 |
| Xylenes, (total) | mg/kg | 0.6 | ND | 06/14/89 |

ND Not detected at or above the MDL.

MDL Method Detection Limit



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PACE Sample Number: 194680

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Parameter Units MDL 0-1 5' DATE ANALYZED

ORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|------------------|---|-----|-----|----------|
| Moisture content | % | 1.0 | 7.2 | 07/06/89 |
|------------------|---|-----|-----|----------|

GCMS FOR VOLATILE ORGANICS-8240

| | | | | |
|----------------------------|-------|-----|----|----------|
| Chloromethane | mg/kg | 0.6 | ND | 06/14/89 |
| Bromomethane | mg/kg | 1.0 | ND | 06/14/89 |
| Vinyl chloride | mg/kg | 0.7 | ND | 06/14/89 |
| Chloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Methylene chloride | mg/kg | 1.2 | ND | 06/14/89 |
| Acetone | mg/kg | 1.2 | ND | 06/14/89 |
| Carbon disulfide | mg/kg | 0.6 | ND | 06/14/89 |
| 1,1-Dichloroethylene | mg/kg | 0.7 | ND | 06/14/89 |
| 1,1-Dichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Trans-1,2-dichloroethylene | mg/kg | 0.5 | ND | 06/14/89 |
| Chloroform | mg/kg | 0.5 | ND | 06/14/89 |
| 1,2-Dichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| 2-Butanone (MEK) | mg/kg | 1.2 | ND | 06/14/89 |
| 1,1,1-Trichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Carbon tetrachloride | mg/kg | 0.5 | ND | 06/14/89 |
| Vinyl acetate | mg/kg | 1.2 | ND | 06/14/89 |
| Bromodichloromethane | mg/kg | 0.5 | ND | 06/14/89 |
| 1,1,2,2-Tetrachloroethane | mg/kg | 0.3 | ND | 06/14/89 |
| 1,2-Dichloropropane | mg/kg | 0.4 | ND | 06/14/89 |
| Trans-1,3-dichloropropene | mg/kg | 0.3 | ND | 06/14/89 |
| Trichloroethylene | mg/kg | 0.5 | ND | 06/14/89 |
| Dibromochloromethane | mg/kg | 0.4 | ND | 06/14/89 |
| 1,1,2-Trichloroethane | mg/kg | 0.4 | ND | 06/14/89 |
| Benzene | mg/kg | 0.3 | ND | 06/14/89 |
| Cis-1,3-dichloropropene | mg/kg | 0.3 | ND | 06/14/89 |
| 2-Chloroethylvinyl ether | mg/kg | 1.2 | ND | 06/14/89 |
| Bromoform | mg/kg | 0.5 | ND | 06/14/89 |

MDL Method Detection Limit

ND Not detected at or above the MDL.



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PACE Sample Number: 194680

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Parameter Units MDL 0-1.5' DATE ANALYZED

ORGANIC ANALYSIS

GCMS FOR VOLATILE ORGANICS-8240

| | | | | |
|-----------------------------|-------|-----|----|----------|
| 2-Hexanone | mg/kg | 1.2 | ND | 06/14/89 |
| 4-Methyl-2-pentanone (MIBK) | mg/kg | 1.2 | ND | 06/14/89 |
| Tetrachloroethylene | mg/kg | 1.0 | ND | 06/14/89 |
| Toluene | mg/kg | 0.5 | ND | 06/14/89 |
| Chlorobenzene | mg/kg | 0.4 | ND | 06/14/89 |
| Ethyl benzene | mg/kg | 0.5 | ND | 06/14/89 |
| Styrene | mg/kg | 0.6 | ND | 06/14/89 |
| Xylenes, (total) | mg/kg | 0.6 | ND | 06/14/89 |

ND Not detected at or above the MDL.

MDL Method Detection Limit

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|---------------------------------|--------------|------------|----------------|----------------------|
| PACE Sample Number: | | | 194690 | |
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| <u>Parameter</u> | <u>Units</u> | <u>MDL</u> | <u>1.5'-3'</u> | <u>DATE ANALYZED</u> |
| ORGANIC ANALYSIS | | | | |
| INDIVIDUAL PARAMETERS | | | | |
| Moisture content | % | 1.0 | 4.3 | 07/06/89 |
| GCMS FOR VOLATILE ORGANICS-8240 | | | | |
| Chloromethane | mg/kg | 0.6 | ND | 06/14/89 |
| Bromomethane | mg/kg | 1.0 | ND | 06/14/89 |
| Vinyl chloride | mg/kg | 0.7 | ND | 06/14/89 |
| Chloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Methylene chloride | mg/kg | 1.2 | ND | 06/14/89 |
| Acetone | mg/kg | 1.2 | ND | 06/14/89 |
| Carbon disulfide | mg/kg | 0.6 | ND | 06/14/89 |
| 1,1-Dichloroethylene | mg/kg | 0.7 | ND | 06/14/89 |
| 1,1-Dichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Trans-1,2-dichloroethylene | mg/kg | 0.5 | ND | 06/14/89 |
| Chloroform | mg/kg | 0.5 | ND | 06/14/89 |
| 1,2-Dichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| 2-Butanone (MEK) | mg/kg | 1.2 | ND | 06/14/89 |
| 1,1,1-Trichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Carbon tetrachloride | mg/kg | 0.5 | ND | 06/14/89 |
| Vinyl acetate | mg/kg | 1.2 | ND | 06/14/89 |
| Bromodichloromethane | mg/kg | 0.5 | ND | 06/14/89 |
| 1,1,2,2-Tetrachloroethane | mg/kg | 0.3 | ND | 06/14/89 |
| 1,2-Dichloropropane | mg/kg | 0.4 | ND | 06/14/89 |
| Trans-1,3-dichloropropene | mg/kg | 0.3 | ND | 06/14/89 |
| Trichloroethylene | mg/kg | 0.5 | ND | 06/14/89 |
| Dibromochloromethane | mg/kg | 0.4 | ND | 06/14/89 |
| 1,1,2-Trichloroethane | mg/kg | 0.4 | ND | 06/14/89 |
| Benzene | mg/kg | 0.3 | ND | 06/14/89 |
| Cis-1,3-dichloropropene | mg/kg | 0.3 | ND | 06/14/89 |
| 2-Chloroethylvinyl ether | mg/kg | 1.2 | ND | 06/14/89 |
| Bromoform | mg/kg | 0.5 | ND | 06/14/89 |

MDL Method Detection Limit
 ND Not detected at or above the MDL.



REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California
Leawood, Kansas

Mr. Dick Clute
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July 27, 1989
PACE Project Number: 890517201

PACE Sample Number: 194690

B-4

Parameter Units MDL 1.5'-3' DATE ANALYZED

ORGANIC ANALYSIS

GCMS FOR VOLATILE ORGANICS-8240

| | | | | |
|-----------------------------|-------|-----|----|----------|
| 2-Hexanone | mg/kg | 1.2 | ND | 06/14/89 |
| 4-Methyl-2-pentanone (MIBK) | mg/kg | 1.2 | ND | 06/14/89 |
| Tetrachloroethylene | mg/kg | 1.0 | ND | 06/14/89 |
| Toluene | mg/kg | 0.5 | ND | 06/14/89 |
| Chlorobenzene | mg/kg | 0.4 | ND | 06/14/89 |
| Ethyl benzene | mg/kg | 0.5 | ND | 06/14/89 |
| Styrene | mg/kg | 0.6 | ND | 06/14/89 |
| Xylenes, (total) | mg/kg | 0.6 | ND | 06/14/89 |

ND Not detected at or above the MDL.

MDL Method Detection Limit



REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California
Leawood, Kansas

Mr. Dick Clute
Page 36

July 27, 1989
PACE Project Number: 890517201

PACE Sample Number: 194760

B-5

1.5'-3'

DATE ANALYZED

Parameter

Units

MDL

ORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Moisture content

%

1.0

5.9

07/06/89

GCMS FOR VOLATILE ORGANICS-8240

| | | | | |
|----------------------------|-------|-----|----|----------|
| Chloromethane | mg/kg | 0.6 | ND | 06/14/89 |
| Bromomethane | mg/kg | 1.0 | ND | 06/14/89 |
| Vinyl chloride | mg/kg | 0.7 | ND | 06/14/89 |
| Chloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Methylene chloride | mg/kg | 1.2 | ND | 06/14/89 |
| Acetone | mg/kg | 1.2 | ND | 06/14/89 |
| Carbon disulfide | mg/kg | 0.6 | ND | 06/14/89 |
| 1,1-Dichloroethylene | mg/kg | 0.7 | ND | 06/14/89 |
| 1,1-Dichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Trans-1,2-dichloroethylene | mg/kg | 0.5 | ND | 06/14/89 |
| Chloroform | mg/kg | 0.5 | ND | 06/14/89 |
| 1,2-Dichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| 2-Butanone (MEK) | mg/kg | 1.2 | ND | 06/14/89 |
| 1,1,1-Trichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Carbon tetrachloride | mg/kg | 0.5 | ND | 06/14/89 |
| Vinyl acetate | mg/kg | 1.2 | ND | 06/14/89 |
| Bromodichloromethane | mg/kg | 0.5 | ND | 06/14/89 |
| 1,1,2,2-Tetrachloroethane | mg/kg | 0.3 | ND | 06/14/89 |
| 1,2-Dichloropropane | mg/kg | 0.4 | ND | 06/14/89 |
| Trans-1,3-dichloropropene | mg/kg | 0.3 | ND | 06/14/89 |
| Trichloroethylene | mg/kg | 0.5 | ND | 06/14/89 |
| Dibromochloromethane | mg/kg | 0.4 | ND | 06/14/89 |
| 1,1,2-Trichloroethane | mg/kg | 0.4 | ND | 06/14/89 |
| Benzene | mg/kg | 0.3 | ND | 06/14/89 |
| Cis-1,3-dichloropropene | mg/kg | 0.3 | ND | 06/14/89 |
| 2-Chloroethylvinyl ether | mg/kg | 1.2 | ND | 06/14/89 |
| Bromoform | mg/kg | 0.5 | ND | 06/14/89 |

MDL Method Detection Limit

ND Not detected at or above the MDL.



REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California
Leawood, Kansas

Mr. Dick Clute
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July 27, 1989
PACE Project Number: 890517201

PACE Sample Number:

194760

B-5

Parameter Units MDL 1.5'-3' DATE ANALYZED

ORGANIC ANALYSIS

GCMS FOR VOLATILE ORGANICS-8240

| | | | | |
|-----------------------------|-------|-----|----|----------|
| 2-Hexanone | mg/kg | 1.2 | ND | 06/14/89 |
| 4-Methyl-2-pentanone (MIBK) | mg/kg | 1.2 | ND | 06/14/89 |
| Tetrachloroethylene | mg/kg | 1.0 | ND | 06/14/89 |
| Toluene | mg/kg | 0.5 | ND | 06/14/89 |
| Chlorobenzene | mg/kg | 0.4 | ND | 06/14/89 |
| Ethyl benzene | mg/kg | 0.5 | ND | 06/14/89 |
| Styrene | mg/kg | 0.6 | ND | 06/14/89 |
| Xylenes, (total) | mg/kg | 0.6 | ND | 06/14/89 |

ND Not detected at or above the MDL.

MDL Method Detection Limit



REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California
Leawood, Kansas

Mr. Dick Clute
Page 38

July 27, 1989
PACE Project Number: 890517201

PACE Sample Number:

194770

B-5

Parameter Units MDL 4'-5.5' DATE ANALYZED

ORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

Moisture content % 1.0 5.7 07/06/89

GCMS FOR VOLATILE ORGANICS-8240

| | | | | |
|----------------------------|-------|-----|----|----------|
| Chloromethane | mg/kg | 0.6 | ND | 06/14/89 |
| Bromomethane | mg/kg | 1.0 | ND | 06/14/89 |
| Vinyl chloride | mg/kg | 0.7 | ND | 06/14/89 |
| Chloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Methylene chloride | mg/kg | 1.2 | ND | 06/14/89 |
| Acetone | mg/kg | 1.2 | ND | 06/14/89 |
| Carbon disulfide | mg/kg | 0.6 | ND | 06/14/89 |
| 1,1-Dichloroethylene | mg/kg | 0.7 | ND | 06/14/89 |
| 1,1-Dichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Trans-1,2-dichloroethylene | mg/kg | 0.5 | ND | 06/14/89 |
| Chloroform | mg/kg | 0.5 | ND | 06/14/89 |
| 1,2-Dichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| 2-Butanone (MEK) | mg/kg | 1.2 | ND | 06/14/89 |
| 1,1,1-Trichloroethane | mg/kg | 0.5 | ND | 06/14/89 |
| Carbon tetrachloride | mg/kg | 0.5 | ND | 06/14/89 |
| Vinyl acetate | mg/kg | 1.2 | ND | 06/14/89 |
| Bromodichloromethane | mg/kg | 0.5 | ND | 06/14/89 |
| 1,1,2,2-Tetrachloroethane | mg/kg | 0.3 | ND | 06/14/89 |
| 1,2-Dichloropropane | mg/kg | 0.4 | ND | 06/14/89 |
| Trans-1,3-dichloropropene | mg/kg | 0.3 | ND | 06/14/89 |
| Trichloroethylene | mg/kg | 0.5 | ND | 06/14/89 |
| Dibromochloromethane | mg/kg | 0.4 | ND | 06/14/89 |
| 1,1,2-Trichloroethane | mg/kg | 0.4 | ND | 06/14/89 |
| Benzene | mg/kg | 0.3 | ND | 06/14/89 |
| Cis-1,3-dichloropropene | mg/kg | 0.3 | ND | 06/14/89 |
| 2-Chloroethylvinyl ether | mg/kg | 1.2 | ND | 06/14/89 |
| Bromoform | mg/kg | 0.5 | ND | 06/14/89 |

MDL Method Detection Limit

ND Not detected at or above the MDL.



REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California
Leawood, Kansas

Mr. Dick Clute
Page 39

July 27, 1989
PACE Project Number: 890517201

PACE Sample Number:

194770

B-5

Parameter Units MDL 4'-5.5' DATE ANALYZED

ORGANIC ANALYSIS

GCMS FOR VOLATILE ORGANICS-8240

| | | | | |
|-----------------------------|-------|-----|----|----------|
| 2-Hexanone | mg/kg | 1.2 | ND | 06/14/89 |
| 4-Methyl-2-pentanone (MIBK) | mg/kg | 1.2 | ND | 06/14/89 |
| Tetrachloroethylene | mg/kg | 1.0 | ND | 06/14/89 |
| Toluene | mg/kg | 0.5 | ND | 06/14/89 |
| Chlorobenzene | mg/kg | 0.4 | ND | 06/14/89 |
| Ethyl benzene | mg/kg | 0.5 | ND | 06/14/89 |
| Styrene | mg/kg | 0.6 | ND | 06/14/89 |
| Xylenes, (total) | mg/kg | 0.6 | ND | 06/14/89 |

ND Not detected at or above the MDL.

MDL Method Detection Limit

The analyses of soil samples were performed 'as received' and do not reflect analyses on a dry weight basis unless indicated.

The data contained in this report were obtained using EPA or other approved methodologies. All analyses were performed by me or under my direct supervision.

Thomas L. Halverson
Inorganic Chemistry Manager

Dennis R. Seeger
Organic Chemistry Manager

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client WCF Freezer Division
 Address 701 33rd Ave N
 ST Cloud, MN 56303
 Phone _____

Report To: _____

Pace Client No. 019002

Bill To: _____

Pace Project Manager DT Commer

P.O. # / Billing Reference _____

Pace Project No. 890517.201

Project Name / No. _____

*Requested Due Date: _____

Sampled By (PRINT):

Erik Forgaard

Sampler Signature

Date Sampled

6-7-89

| ITEM NO. | SAMPLE DESCRIPTION | TIME | MATRIX | PACE NO. | NO. OF CONTAINERS | PRESERVATIVES | | | ANALYSES REQUEST | REMARKS |
|----------|----------------------------------------|------|--------|------------|-------------------|---------------|--------------------------------|------------------|------------------|---------|
| | | | | | | UNPRESERVED | H ₂ SO ₄ | HNO ₃ | VOA | |
| 1 | B-5 1 ¹ / ₂ -3' | | | 5611194760 | 3 1 | | 2 | | | ✓ |
| 2 | B-5 4-5 ¹ / ₂ | | | 773 | 3 1 | | 2 | | | ✓ |
| 3 | B-5 6 ¹ / ₂ -8 | | | 78 | 3 1 | | 2 | | | ✓ |
| 4 | B-5 9-10 ¹ / ₂ | | | 79 | 3 1 | | 2 | | | ✓ |
| 5 | B-5 11 ¹ / ₂ -13 | | | 80 | 3 1 | | 2 | | | ✓ |
| 6 | B-5 14-15 ¹ / ₂ | | | 81 | 3 1 | | 2 | | | ✓ |
| 7 | B-5 16 ¹ / ₂ -18 | | | 82 | 2 | | 2 | | | ✓ |
| 8 | B-5 19-20 ¹ / ₂ | | | 83 | 3 1 | | 2 | | | ✓ |

| COOLER NOS. | BAILERS | SHIPMENT METHOD | OUT/DATE | RETURNED/DATE | ITEM NUMBER | RELINQUISHED BY / AFFILIATION | ACCEPTED BY / AFFILIATION | DATE | TIME |
|-------------|---------|-----------------|----------|---------------|-------------|-------------------------------|---------------------------|---------|------|
| | | | | | | Erik Forgaard / Pace | Myc | 6/12/89 | |

Additional Comments

SEE REVERSE SIDE FOR INSTRUCTIONS

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client WCT Freezer Divisions
 Address 101 33rd Ave. N
St Cloud, MN 56303
 Phone _____

Report To: _____

Pace Client No. 019002

Bill To: _____

Pace Project Manager JAC

P.O. # / Billing Reference _____

Pace Project No. 090517-201

Project Name / No. _____

*Requested Due Date: _____

Sampled By (PRINT):

Erik ForgaardSampler Signature Erik -1Date Sampled 6-7-89

| ITEM NO. | SAMPLE DESCRIPTION | TIME | MATRIX | PACE NO. | NO. OF CONTAINERS | PRESERVATIVES | | | | ANALYSES REQUEST | REMARKS |
|----------|--------------------|------|--------|----------|-------------------|---------------|--------------------------------|------------------|-----|------------------|-----------|
| | | | | | | UNPRESERVED | H ₂ SO ₄ | HNO ₃ | VOA | | |
| 1 | B-4 0-1½ | | Soil | 94408 | 3 | 1 | | | 2 | ✓ | Hold f240 |
| 2 | B-4 1½-3 | | | 693 | 1 | 2 | | | | ✓ | Hold f240 |
| 3 | B-4 4-5½ | | | 703 | 1 | 2 | | | | ✓ | Hold f240 |
| 4 | B-4 6½-8 | | | 713 | 1 | 2 | | | | ✓ | Hold f240 |
| 5 | B-4 9-10½ | | | 723 | 1 | 2 | | | | ✓ | Hold f240 |
| 6 | B-4 11½-13 | | | 732 | 2 | | | | | ✓ | Hold f240 |
| 7 | B-4 13-14½ | | | 743 | 1 | 2 | | | | ✓ | Hold f240 |
| 8 | B-4 15½-17 | | | 753 | 1 | 2 | | | | ✓ | Hold f240 |

| COOLER NOS. | BAILERS | SHIPMENT METHOD OUT/DATE | SHIPMENT METHOD RETURNED/DATE | ITEM NUMBER | RELINQUISHED BY / AFFILIATION | ACCEPTED BY / AFFILIATION | DATE | TIME |
|-------------|---------|-----------------------------|----------------------------------|-------------|-------------------------------|---------------------------|---------|------|
| | | | | | Erik Forgaard/PACE | Myc | 6/28/89 | |

Additional Comments

SEE REVERSE SIDE FOR INSTRUCTIONS

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client WCI Freezer Division
 Address 101 33rd Ave N
St Cloud, MN 56303
 Phone _____

Report To: _____

Pace Client No. 019002

Bill To: _____

Pace Project Manager D.A. Cornean

P.O. # / Billing Reference _____

Pace Project No. 890517.2D1

Project Name / No. _____

*Requested Due Date: _____

Sampled By (PRINT):

Erik torgaard

Sampler Signature

Erik Torgaard

Date Sampled

6-8-89

| ITEM NO. | SAMPLE DESCRIPTION | TIME | MATRIX | PACE NO. | NO. OF CONTAINERS | PRESERVATIVES | | | ANALYSES REQUEST | REMARKS |
|----------|--------------------------|------|--------|----------|-------------------|---------------|--------------------------------|------------------|------------------|---------|
| | | | | | | UNPRESERVED | H ₂ SO ₄ | HNO ₃ | VOA | |
| 1 | B-3 6 $\frac{1}{2}$ -8' | | Soil | A1460 | 3 | 1 | | 2 | ✓ | |
| ✓ 2 | B-3 9-10 $\frac{1}{2}$ | | | | 6 | 3 | 1 | 2 | | ✓✓ |
| ✓ 3 | B-3 11 $\frac{1}{2}$ -13 | | | | 6 | 2 | 3 | 1 | | ✓✓ |
| ✓ 4 | B-3 14-15 $\frac{1}{2}$ | | | | 6 | 3 | 1 | 2 | | ✓✓ |
| ✓ 5 | B-3 16 $\frac{1}{2}$ -18 | | | | 6 | 4 | 3 | 1 | | ✓✓ |
| ✓ 6 | B-3 19-20 $\frac{1}{2}$ | | | | 6 | 5 | 3 | 1 | | ✓✓ |
| ✓ 7 | B-3 21 $\frac{1}{2}$ -23 | | | | 6 | 6 | 3 | 1 | | ✓✓✓ |
| 8 | B-3 24-25 $\frac{1}{2}$ | | | | 6 | 7 | 3 | 1 | | ✓✓✓ |

| COOLER NOS. | BAILERS | SHIPMENT METHOD | ITEM NUMBER | RELINQUISHED BY / AFFILIATION | ACCEPTED BY / AFFILIATION | DATE | TIME |
|-------------|---------------|-----------------|-------------|-------------------------------|---------------------------|------|------|
| OUT/DATE | RETURNED/DATE | | | | | | |
| | | | | | | | |

Additional Comments

See attached list of metals

Erik Torgaard / Pace Mye 6/2/89

SEE REVERSE SIDE FOR INSTRUCTIONS

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client WCI Freezer Division
 Address 701 33rd Ave. N
 St. Cloud, MN 56303
 Phone _____

Report To: _____

Pace Client No. 019200

Bill To: _____

Pace Project Manager DComeau

P.O. # / Billing Reference _____

Pace Project No. 890517, 201

Project Name / No. _____

*Requested Due Date: _____

Sampled By (PRINT):

Erik Forgaard

Sampler Signature

Date Sampled

6/8-89

| ITEM NO. | SAMPLE DESCRIPTION | TIME | MATRIX | PACE NO. | PRESERVATIVES | | | | ANALYSES REQUEST | REMARKS |
|----------|--------------------|------|--------|----------|------------------|-------------|--------------------------------|------------------|------------------|---------|
| | | | | | NO OF CONTAINERS | UNPRESERVED | H ₂ SO ₄ | HNO ₃ | VOA | |
| 1 | B-2 9-10½' | | Soil | 9454 | 3 | 1 | | 2 | ✓ ✓ ✓ | |
| 2 | B-2 11½-13' | | | 553 | 3 | 1 | | 2 | ✓ ✓ | |
| 3 | B-2 14-15½' | | | 563 | 3 | 1 | | 2 | ✓ ✓ | |
| 4 | B-2 16½-18' | | | 573 | 3 | 1 | | 2 | ✓ ✓ | |
| 5 | B-2 19-20½' | | | 583 | 3 | 1 | | 2 | ✓ ✓ ✓ | |
| 6 | B-2 20½-22 | | | 593 | 3 | 1 | | 2 | ✓ ✓ | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |

| COOLER NOS. | BAILERS | SHIPMENT OUT/DATE | METHOD RETURNED/DATE | ITEM NUMBER | RELINQUISHED BY / AFFILIATION | ACCEPTED BY / AFFILIATION | DATE | TIME |
|-------------|---------|-------------------|----------------------|-------------|-------------------------------|---------------------------|---------|------|
| | | | | | Erik Forgaard / Pace Mfg | | 6/12/89 | |

Additional Comments

See Attached list of metals

SEE REVERSE SIDE FOR INSTRUCTIONS

pace

laboratories, inc.

NO. 5442

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client WCT Freezer Division
 Address 701 33rd Ave N
St Cloud, MN 56303
 Phone Jim Postiglione

Report To: _____

Bill To: _____

P.O. # / Billing Reference _____

Project Name / No. SabrelinerPace Client No. 019002Pace Project Manager J. ComeauPace Project No. 890517.201

*Requested Due Date: _____

Sampled By (PRINT):

Jim Postiglione

6-5-89

Sampler Signature

Date Sampled

| ITEM NO. | SAMPLE DESCRIPTION | TIME | MATRIX | PACE NO. | NO. OF CONTAINERS | PRESERVATIVES | | | ANALYSES REQUEST | REMARKS |
|----------|--------------------|-------|--------|----------|-------------------|---------------|--------------------------------|------------------|------------------|---------|
| | | | | | | UNPRESERVED | H ₂ SO ₄ | HNO ₃ | VOA | |
| 1 | B-1 1.5-3.0' | 10:20 | 50.1 | 194446 | 31 | | | | 2 | V |
| 2 | B-1 4.0-5.5' | 10:35 | | | 47 | 3 | 1 | | 2 | V |
| 3 | B-1 6.5-8.0 | 10:45 | | | 48 | 3 | 1 | | 2 | V |
| 4 | B-1 9.0-10.5 | 11:00 | | | 49 | 2 | 1 | | 1 | V/V |
| 5 | B-1 11.5-13.0 | 11:20 | | | 50 | 3 | 1 | | 2 | V/V |
| 6 | B-1 14.0-15.5 | 11:40 | | | 51 | 3 | 1 | | 2 | V/V |
| 7 | B-1 16.0-18.5 | 11:50 | | | 52 | 3 | 1 | | 2 | V/V |
| 8 | B-1 19.0-20.5 | 12:05 | | | 53 | 3 | 1 | | 2 | V/V |

| COOLER NOS. | BAILERS | SHIPMENT METHOD | OUT/DATE | RETURNED/DATE | ITEM NUMBER | RELINQUISHED BY / AFFILIATION | ACCEPTED BY / AFFILIATION | DATE | TIME |
|-------------|---------|-----------------|----------|---------------|-------------|-------------------------------|---------------------------|------|------|
| | | | | | | | | | |

Additional Comments

See attached
list of Metals

1-8 Daniel A. Comeau/PACB MYC/PACG 6/5/89

SEE REVERSE SIDE FOR INSTRUCTIONS

ORIGINAL



REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California
Leawood, Kansas
Irvine, California

WCI Freezer Division
701 33rd Avenue North
St. Cloud, MN 56303

September 20, 1989
PACE Project Number: 890822200

Attn: Mr. Dick Clute

August Well Sampling

| | | | |
|---------------------|--------------|------------|----------------------|
| PACE Sample Number: | 304070 | | |
| Date Collected: | 08/23/89 | | |
| Date Received: | 08/23/89 | | |
| <u>Parameter</u> | <u>Units</u> | <u>MDL</u> | <u>DATE ANALYZED</u> |

FIELD PARAMETERS

GROUND WATER FIELD PARAMETERS

| | | | | |
|-------------------------------|-----------------------|------|---------|----------|
| Specific Conductivity (Field) | umhos/cm ² | 10 | 650 | 08/22/89 |
| pH (Field) | units | 0.1 | 7.1 | 08/22/89 |
| Static Water (Elevation) | ft | 0.01 | 1029.54 | 08/22/89 |
| Temperature (Field) | Degrees C | 0.5 | 11.0 | 08/22/89 |

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|----------------|------|--------|------|----------|
| Aluminum | mg/L | 0.5 | ND | 09/11/89 |
| Arsenic | mg/L | 0.002 | ND | 09/12/89 |
| Barium | mg/L | 0.2 | ND | 09/07/89 |
| Cadmium | mg/L | 0.0010 | ND | 09/12/89 |
| Chromium | mg/L | 0.001 | ND | 09/11/89 |
| Cobalt | mg/L | 0.05 | ND | 09/05/89 |
| | | | | |
| Copper | mg/L | 0.01 | ND | 08/31/89 |
| Cyanide, Total | mg/L | 0.01 | ND | 08/25/89 |
| Iron | mg/L | 0.05 | 0.05 | 09/01/89 |
| Lead | mg/L | 0.001 | ND | 09/06/89 |
| Magnesium | mg/L | 0.10 | 33 | 09/11/89 |
| Manganese | mg/L | 0.01 | 0.03 | 09/01/89 |
| | | | | |
| Mercury | mg/L | 0.0002 | ND | 09/08/89 |
| Nickel | mg/L | 0.05 | ND | 08/31/89 |
| Potassium | mg/L | 0.10 | 2.1 | 09/12/89 |
| Selenium | mg/L | 0.050 | ND | 09/12/89 |
| Silver | mg/L | 0.04 | ND | 08/25/89 |
| Sodium | mg/L | 0.10 | 6.0 | 09/12/89 |
| | | | | |
| Thallium | mg/L | 0.4 | ND | 09/10/89 |

MDL Method Detection Limit

ND Not detected at or above the MDL.



REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California
Leawood, Kansas
Irvine, California

Mr. Dick Clute
Page 2

September 20, 1989
PACE Project Number: 890822200

| | | | |
|---------------------|--------------|------------|-------------|
| PACE Sample Number: | 304070 | | |
| Date Collected: | 08/23/89 | | |
| Date Received: | 08/23/89 | | |
| <u>Parameter</u> | <u>Units</u> | <u>MDL</u> | <u>MW-1</u> |

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|------|------|------|----|----------|
| Zinc | mg/L | 0.10 | ND | 08/30/89 |
|------|------|------|----|----------|

ORGANIC ANALYSIS

VOLATILE ORGANICS-624

| | | | | |
|----------------------------|------|-----|----|----------|
| Benzene | ug/L | 2.7 | ND | 08/31/89 |
| Bromodichloromethane | ug/L | 4.3 | ND | 08/31/89 |
| Bromoform | ug/L | 4.0 | ND | 08/31/89 |
| Bromomethane | ug/L | 7.1 | ND | 08/31/89 |
| Carbon tetrachloride | ug/L | 3.8 | ND | 08/31/89 |
| Chlorobenzene | ug/L | 2.5 | ND | 08/31/89 |
| Chloroethane | ug/L | 4.1 | ND | 08/31/89 |
| 2-Chloroethylvinyl ether | ug/L | 6.3 | ND | 08/31/89 |
| Chloroform | ug/L | 4.5 | ND | 08/31/89 |
| Chloromethane | ug/L | 4.7 | ND | 08/31/89 |
| Dibromochloromethane | ug/L | 3.0 | ND | 08/31/89 |
| 1,2-Dichlorobenzene | ug/L | 9.6 | ND | 08/31/89 |
| 1,3-Dichlorobenzene | ug/L | 9.5 | ND | 08/31/89 |
| 1,4-Dichlorobenzene | ug/L | 12 | ND | 08/31/89 |
| 1,1-Dichloroethane | ug/L | 4.4 | ND | 08/31/89 |
| 1,2-Dichloroethane | ug/L | 3.9 | ND | 08/31/89 |
| 1,1-Dichloroethylene | ug/L | 6.5 | ND | 08/31/89 |
| Trans-1,2-dichloroethylene | ug/L | 3.7 | ND | 08/31/89 |
| 1,2-Dichloropropane | ug/L | 3.0 | ND | 08/31/89 |
| Cis-1,3-dichloropropene | ug/L | 1.4 | ND | 08/31/89 |
| Trans-1,3-dichloropropene | ug/L | 2.1 | ND | 08/31/89 |
| Ethyl benzene | ug/L | 4.2 | ND | 08/31/89 |
| Methylene chloride | ug/L | 10 | ND | 08/31/89 |
| 1,1,2,2-Tetrachloroethane | ug/L | 1.8 | ND | 08/31/89 |

MDL Method Detection Limit

ND Not detected at or above the MDL.



REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa
Novato, California
Leawood, Kansas
Irvine, California

Mr. Dick Clute
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September 20, 1989
PACE Project Number: 890822200

PACE Sample Number:
Date Collected:
Date Received:
Parameter

304070
08/23/89
08/23/89

Units MDL MW-1 DATE ANALYZED

ORGANIC ANALYSIS

VOLATILE ORGANICS-624

| | | | | |
|------------------------|------|-----|----|----------|
| Tetrachloroethylene | ug/L | 7.1 | ND | 08/31/89 |
| Toluene | ug/L | 4.3 | ND | 08/31/89 |
| 1,1,1-Trichloroethane | ug/L | 4.3 | ND | 08/31/89 |
| 1,1,2-Trichloroethane | ug/L | 3.1 | ND | 08/31/89 |
| Trichloroethylene | ug/L | 3.5 | ND | 08/31/89 |
| Trichlorofluoromethane | ug/L | 5.9 | ND | 08/31/89 |
| Vinyl chloride | ug/L | 6.0 | ND | 08/31/89 |

MDL Method Detection Limit
ND Not detected at or above the MDL.



REPORT OF LABORATORY ANALYSIS

Offices:
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Leawood, Kansas
Irvine, California

Mr. Dick Clute
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September 20, 1989
PACE Project Number: 890822200

| | | | |
|---------------------|--------------|------------|----------------------|
| PACE Sample Number: | 304080 | | |
| Date Collected: | 08/23/89 | | |
| Date Received: | 08/23/89 | | |
| <u>Parameter</u> | <u>Units</u> | <u>MDL</u> | <u>DATE ANALYZED</u> |

FIELD PARAMETERS

GROUND WATER FIELD PARAMETERS

| | | | | |
|-------------------------------|-----------------------|------|---------|----------|
| Specific Conductivity (Field) | umhos/cm ² | 10 | 880 | 08/22/89 |
| pH (Field) | units | 0.1 | 7.1 | 08/22/89 |
| Static Water (Elevation) | ft | 0.01 | 1026.67 | 08/22/89 |
| Temperature (Field) | Degrees C | 0.5 | 13.5 | 08/22/89 |

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|----------------|------|--------|-------|----------|
| Aluminum | mg/L | 0.5 | ND | 09/11/89 |
| Arsenic | mg/L | 0.002 | 0.009 | 09/12/89 |
| Barium | mg/L | 0.2 | ND | 09/07/89 |
| Cadmium | mg/L | 0.0010 | ND | 09/12/89 |
| Chromium | mg/L | 0.001 | ND | 09/11/89 |
| Cobalt | mg/L | 0.05 | ND | 09/05/89 |
| | | | | |
| Copper | mg/L | 0.01 | 0.01 | 08/31/89 |
| Cyanide, Total | mg/L | 0.01 | ND | 08/25/89 |
| Iron | mg/L | 0.05 | 4.5 | 09/01/89 |
| Lead | mg/L | 0.001 | ND | 09/06/89 |
| Magnesium | mg/L | 0.10 | 31 | 09/11/89 |
| Manganese | mg/L | 0.01 | 1.1 | 09/01/89 |
| | | | | |
| Mercury | mg/L | 0.0002 | ND | 09/08/89 |
| Nickel | mg/L | 0.05 | ND | 08/31/89 |
| Potassium | mg/L | 0.10 | 3.4 | 09/12/89 |
| Selenium | mg/L | 0.050 | ND | 09/12/89 |
| Silver | mg/L | 0.04 | ND | 08/25/89 |
| Sodium | mg/L | 0.10 | 32 | 09/12/89 |
| | | | | |
| Thallium | mg/L | 0.4 | ND | 09/10/89 |
| Zinc | mg/L | 0.10 | ND | 08/30/89 |

MDL Method Detection Limit

ND Not detected at or above the MDL.



REPORT OF LABORATORY ANALYSIS

Offices:
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Mr. Dick Clute
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September 20, 1989
PACE Project Number: 890822200

PACE Sample Number:

304080

Date Collected:

08/23/89

Date Received:

08/23/89

Parameter

Units MDL MW-2 DATE ANALYZED

ORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

VOLATILE ORGANICS-624

| | | | | |
|----------------------------|------|-----|----|----------|
| Benzene | ug/L | 2.7 | ND | 08/31/89 |
| Bromodichloromethane | ug/L | 4.3 | ND | 08/31/89 |
| Bromoform | ug/L | 4.0 | ND | 08/31/89 |
| Bromomethane | ug/L | 7.1 | ND | 08/31/89 |
| Carbon tetrachloride | ug/L | 3.8 | ND | 08/31/89 |
| Chlorobenzene | ug/L | 2.5 | ND | 08/31/89 |
| Chloroethane | ug/L | 4.1 | ND | 08/31/89 |
| 2-Chloroethylvinyl ether | ug/L | 6.3 | ND | 08/31/89 |
| Chloroform | ug/L | 4.5 | ND | 08/31/89 |
| Chloromethane | ug/L | 4.7 | ND | 08/31/89 |
| Dibromochloromethane | ug/L | 3.0 | ND | 08/31/89 |
| 1,2-Dichlorobenzene | ug/L | 9.6 | ND | 08/31/89 |
| 1,3-Dichlorobenzene | ug/L | 9.5 | ND | 08/31/89 |
| 1,4-Dichlorobenzene | ug/L | 12 | ND | 08/31/89 |
| 1,1-Dichloroethane | ug/L | 4.4 | ND | 08/31/89 |
| 1,2-Dichloroethane | ug/L | 3.9 | ND | 08/31/89 |
| 1,1-Dichloroethylene | ug/L | 6.5 | ND | 08/31/89 |
| Trans-1,2-dichloroethylene | ug/L | 3.7 | ND | 08/31/89 |
| 1,2-Dichloropropane | ug/L | 3.0 | ND | 08/31/89 |
| Cis-1,3-dichloropropene | ug/L | 1.4 | ND | 08/31/89 |
| Trans-1,3-dichloropropene | ug/L | 2.1 | ND | 08/31/89 |
| Ethyl benzene | ug/L | 4.2 | ND | 08/31/89 |
| Methylene chloride | ug/L | 10 | ND | 08/31/89 |
| 1,1,2,2-Tetrachloroethane | ug/L | 1.8 | ND | 08/31/89 |
| Tetrachloroethylene | ug/L | 7.1 | ND | 08/31/89 |
| Toluene | ug/L | 4.3 | ND | 08/31/89 |

MDL Method Detection Limit

ND Not detected at or above the MDL.



REPORT OF LABORATORY ANALYSIS

Offices:
Minneapolis, Minnesota
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September 20, 1989
PACE Project Number: 890822200

PACE Sample Number:

304080

Date Collected:

08/23/89

Date Received:

08/23/89

Parameter

Units

MDL

MW-2

DATE ANALYZED

ORGANIC ANALYSIS

VOLATILE ORGANICS-624

| | | | | |
|------------------------|------|-----|----|----------|
| 1,1,1-Trichloroethane | ug/L | 4.3 | ND | 08/31/89 |
| 1,1,2-Trichloroethane | ug/L | 3.1 | ND | 08/31/89 |
| Trichloroethylene | ug/L | 3.5 | ND | 08/31/89 |
| Trichlorofluoromethane | ug/L | 5.9 | ND | 08/31/89 |
| Vinyl chloride | ug/L | 6.0 | ND | 08/31/89 |

MDL Method Detection Limit

ND Not detected at or above the MDL.



REPORT OF LABORATORY ANALYSIS

Offices:
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September 20, 1989
PACE Project Number: 890822200

| | | | |
|---------------------|----------|-----|---------------|
| PACE Sample Number: | 304090 | | |
| Date Collected: | 08/23/89 | | |
| Date Received: | 08/23/89 | | |
| Parameter | Units | MDL | DATE ANALYZED |

FIELD PARAMETERS

GROUND WATER FIELD PARAMETERS

| | | | | |
|-------------------------------|-----------------------|------|---------|----------|
| Specific Conductivity (Field) | umhos/cm ² | 10 | 560 | 08/22/89 |
| pH (Field) | units | 0.1 | 7.2 | 08/22/89 |
| Static Water (Elevation) | ft | 0.01 | 1025.41 | 08/22/89 |
| Temperature (Field) | Degrees C | 0.5 | 16.0 | 08/22/89 |

INORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

| | | | | |
|----------------|------|--------|--------|----------|
| Aluminum | mg/L | 0.5 | ND | 09/11/89 |
| Arsenic | mg/L | 0.002 | 0.005 | 09/12/89 |
| Barium | mg/L | 0.2 | ND | 09/07/89 |
| Cadmium | mg/L | 0.0010 | 0.0016 | 09/13/89 |
| Chromium | mg/L | 0.001 | ND | 09/11/89 |
| Cobalt | mg/L | 0.05 | ND | 09/05/89 |
| | | | | |
| Copper | mg/L | 0.01 | 0.02 | 08/31/89 |
| Cyanide, Total | mg/L | 0.01 | ND | 08/25/89 |
| Iron | mg/L | 0.05 | ND | 09/01/89 |
| Lead | mg/L | 0.001 | ND | 09/06/89 |
| Magnesium | mg/L | 0.10 | 18 | 09/11/89 |
| Manganese | mg/L | 0.01 | 0.36 | 09/01/89 |
| | | | | |
| Mercury | mg/L | 0.0002 | ND | 09/08/89 |
| Nickel | mg/L | 0.05 | ND | 08/31/89 |
| Potassium | mg/L | 0.10 | 3.1 | 09/12/89 |
| Selenium | mg/L | 0.050 | ND | 09/12/89 |
| Silver | mg/L | 0.04 | ND | 08/25/89 |
| Sodium | mg/L | 0.10 | 37 | 09/12/89 |
| | | | | |
| Thallium | mg/L | 0.4 | ND | 09/10/89 |
| Zinc | mg/L | 0.10 | ND | 08/30/89 |

MDL Method Detection Limit

ND Not detected at or above the MDL.



REPORT OF LABORATORY ANALYSIS

Offices:
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Mr. Dick Clute
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September 20, 1989
PACE Project Number: 890822200

| | | | |
|---------------------|--------------|------------|-------------|
| PACE Sample Number: | 304090 | | |
| Date Collected: | 08/23/89 | | |
| Date Received: | 08/23/89 | | |
| <u>Parameter</u> | <u>Units</u> | <u>MDL</u> | <u>MW-3</u> |

ORGANIC ANALYSIS

INDIVIDUAL PARAMETERS

VOLATILE ORGANICS-624

| | | | | |
|----------------------------|------|-----|----|----------|
| Benzene | ug/L | 2.7 | ND | 08/31/89 |
| Bromodichloromethane | ug/L | 4.3 | ND | 08/31/89 |
| Bromoform | ug/L | 4.0 | ND | 08/31/89 |
| Bromomethane | ug/L | 7.1 | ND | 08/31/89 |
| Carbon tetrachloride | ug/L | 3.8 | ND | 08/31/89 |
| Chlorobenzene | ug/L | 2.5 | ND | 08/31/89 |
| Chloroethane | ug/L | 4.1 | ND | 08/31/89 |
| 2-Chloroethylvinyl ether | ug/L | 6.3 | ND | 08/31/89 |
| Chloroform | ug/L | 4.5 | ND | 08/31/89 |
| Chloromethane | ug/L | 4.7 | ND | 08/31/89 |
| Dibromochloromethane | ug/L | 3.0 | ND | 08/31/89 |
| 1,2-Dichlorobenzene | ug/L | 9.6 | ND | 08/31/89 |
| 1,3-Dichlorobenzene | ug/L | 9.5 | ND | 08/31/89 |
| 1,4-Dichlorobenzene | ug/L | 12 | ND | 08/31/89 |
| 1,1-Dichloroethane | ug/L | 4.4 | ND | 08/31/89 |
| 1,2-Dichloroethane | ug/L | 3.9 | ND | 08/31/89 |
| 1,1-Dichloroethylene | ug/L | 6.5 | ND | 08/31/89 |
| Trans-1,2-dichloroethylene | ug/L | 3.7 | ND | 08/31/89 |
| 1,2-Dichloropropane | ug/L | 3.0 | ND | 08/31/89 |
| Cis-1,3-dichloropropene | ug/L | 1.4 | ND | 08/31/89 |
| Trans-1,3-dichloropropene | ug/L | 2.1 | ND | 08/31/89 |
| Ethyl benzene | ug/L | 4.2 | ND | 08/31/89 |
| Methylene chloride | ug/L | 10 | ND | 08/31/89 |
| 1,1,2,2-Tetrachloroethane | ug/L | 1.8 | ND | 08/31/89 |
| Tetrachloroethylene | ug/L | 7.1 | ND | 08/31/89 |
| Toluene | ug/L | 4.3 | ND | 08/31/89 |

MDL Method Detection Limit
ND Not detected at or above the MDL.



REPORT OF LABORATORY ANALYSIS

Offices:
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Mr. Dick Clute
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September 20, 1989
PACE Project Number: 890822200

| | | | |
|---------------------|--------------|------------|-------------|
| PACE Sample Number: | 304090 | | |
| Date Collected: | 08/23/89 | | |
| Date Received: | 08/23/89 | | |
| <u>Parameter</u> | <u>Units</u> | <u>MDL</u> | <u>MW-3</u> |

ORGANIC ANALYSIS

VOLATILE ORGANICS-624

| | | | | |
|------------------------|------|-----|----|----------|
| 1,1,1-Trichloroethane | ug/L | 4.3 | ND | 08/31/89 |
| 1,1,2-Trichloroethane | ug/L | 3.1 | ND | 08/31/89 |
| Trichloroethylene | ug/L | 3.5 | ND | 08/31/89 |
| Trichlorofluoromethane | ug/L | 5.9 | ND | 08/31/89 |
| Vinyl chloride | ug/L | 6.0 | ND | 08/31/89 |

MDL Method Detection Limit
ND Not detected at or above the MDL.

The data contained in this report were obtained using EPA or other approved methodologies. All analyses were performed by me or under my direct supervision.

Thomas L. Halverson
Inorganic Chemistry Manager

Dennis R. Seeger
Organic Chemistry Manager

FIELD LOG DATA SHEET
PACE Laboratories, Inc.
WELL SAMPLING

Client: WCI Project: Aug. Sampling Project #: 890822.200

Sample Site: MH-1

Well Identification and Description: (Locked X Not Locked) Key#:

ID inches 2 PVC: Steel: Stainless Steel: Other: Labeled: MH-1

Total Well Depth (from top of casing) 5.27 meters 17.28 feet Elevation: 1042.46 feet

Static Water Level (from top of casing) Before Prepumping: 3.94 meters 12.92 feet

Static Water Level (from top of casing) At Time of Sampling: 3.94 meters 12.92 feet

Static Water Elevation: 1029.54 feet Water Column: 4.36 feet One Casing Volume .70 gal

Date Prepumped: 8/23/89 Time Prepumped: 1025 Volume Prepumped: 2.6 gal

Prepumping Method Used: 2 PC SS Baller Pump Rate: N/A gpm

Date Sampled: 8/23/89 Time Sampled: 1100 Sampling Equipment Used: Above Baller

Sample Temperature: 11.0 °C Sample pH: 7.1 Sample Specific Conductance: 650 umho/cm²

Field Measurements Temperature Corrected: Yes X No Metals Filtered in Field: Yes X No

Weather Conditions: 70° and sunny

Observations: collected prepump

split with Metcalf and Eddy

Sample Description: silty brown/no odor

Name and Affiliation of Sampler(s) Terry J. Borgerding, PACE Laboratories, Inc.

Name and Affiliation of Inspector(s) Present: Joseph Julik, MPCA/Ken Krueger Metcalf & Ed.

STABILIZATION TEST

| Time | pH | Specific Conductance (umhos/cm ²) | Temp. (°C) | Cumulative Volume Removed (gallons) |
|------|-----|--------------------------------------------------|---------------|----------------------------------------|
| 1030 | 7.1 | 650 | 11 | .90 |
| 1034 | 7.1 | 650 | 11 | 1.7 |
| 1039 | 7.1 | 650 | 11 | 2.6 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

FIELD LOG DATA SHEET
PACE Laboratories, Inc.
WELL SAMPLING

Client: WCI Project: Aug. Sampling Project #: 890822.200

Sample Site: MH-2

Well Identification and Description: (Locked X Not Locked) Key#:

ID inches 2 PVC: Steel: Stainless Steel: Other: Labeled: MH-2

Total Well Depth (from top of casing) 7.27 meters 23.84 feet Elevation: 1044.93 feet

Static Water Level (from top of casing) Before Prepumping: 5.57 meters 18.26 feet

Static Water Level (from top of casing) At Time of Sampling: 5.57 meters 18.26 feet

Static Water Elevation: 1026.67 feet Water Column: 5.6 feet One Casing Volume .90 gal

Date Prepumped: 8/23/89 Time Prepumped: 1128-1148 Volume Prepumped: 3.0 gal

Prepumping Method Used: 2 PC SS Bailer Pump Rate: N/A gpm

Date Sampled: 8/23/89 Time Sampled: 1200 Sampling Equipment Used: above bailer

Sample Temperature: 13.5 °C Sample pH: 7.1 Sample Specific Conductance: 880 umho/cm²

Field Measurements Temperature Corrected: Yes X No Metals Filtered in Field: Yes X No

Weather Conditions: 70° and sunny

Observations: collected prepump

split with Metcalf and Eddy

Sample Description: cloudy-not odor

Name and Affiliation of Sampler(s) Terry J. Borgerding, PACE Laboratories, Inc.

Name and Affiliation of Inspector(s) Present: Joseph Julik, MPCA/Ken Krueger Metcalf & Ed.

STABILIZATION TEST

| Time | pH | Specific Conductance (umhos/cm ²) | Temp. (°C) | Cumulative Volume Removed (gallons) |
|------|-----|--------------------------------------------------|---------------|----------------------------------------|
| 1132 | 7.1 | 880 | 13.5 | 1.0 |
| 1137 | 7.1 | 880 | 13.5 | 2.0 |
| 1143 | 7.1 | 880 | 13.5 | 3.0 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

FIELD LOG DATA SHEET
PACE Laboratories, Inc.
WELL SAMPLING

Client: HCI Project: Aug. Sampling Project #: 890822.200

Sample Site: MW-3

Well Identification and Description: (Locked X Not Locked) Key#:

ID inches 2 PVC: Steel: Stainless Steel: Other: Labeled: MW-3

Total Well Depth (from top of casing) 6.48 meters 21.25 feet Elevation: 1043.71 feet

Static Water Level (from top of casing) Before Prepumping: 5.58 meters 18.30 feet

Static Water Level (from top of casing) At Time of Sampling: 5.58 meters 18.30 feet

Static Water Elevation: 1025.41 feet Water Column: 2.95 feet One Casing Volume .48 gal

Date Prepumped: 8/23/89 Time Prepumped: 1235-1246 Volume Prepumped: 1.9 gal

Prepumping Method Used: 2 PC SS Bailer Pump Rate: N/A gpm

Date Sampled: 8/23/89 Time Sampled: 1300 Sampling Equipment Used: above bailer

Sample Temperature: 16 °C Sample pH: 7.2 Sample Specific Conductance: 560 umho/cm²

Field Measurements Temperature Corrected: Yes X No Metals Filtered in Field: Yes X No

Weather Conditions: 70° and sunny

Observations: collected prepump

split with Metcalf and Eddy

Sample Description: silty brown-no odor

Name and Affiliation of Sampler(s) Terry J. Borgerding, PACE Laboratories, Inc.

Name and Affiliation of Inspector(s) Present: Joseph Julik, MPCA/Ken Krueger Metcalf & Ed.

STABILIZATION TEST

| Time | pH | Specific Conductance (umhos/cm ²) | Temp. (°C) | Cumulative Volume Removed (gallons) |
|------|-----|--------------------------------------------------|---------------|----------------------------------------|
| 1239 | 7.2 | 570 | 16 | .7 |
| 1242 | 7.2 | 560 | 16 | 1.3 |
| 1246 | 7.2 | 560 | 16 | 1.9 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

pace

laboratories, inc.

NO. 6830

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client

WCI

Address

Phone

Sampled By (PRINT):

Terence J. Bergerding

Sampler Signature

Date Sampled

Terence J. Bergerding

8/23/89

Report To:

Pace Client No. 019002

Bill To:

Pace Project Manager DAC

P.O. # / Billing Reference

Pace Project No.

Project Name / No. MW-3 Extra

*Requested Due Date: 9-13-89

| ITEM NO. | SAMPLE DESCRIPTION | TIME | MATRIX | PACE NO. | NO. OF CONTAINERS | PRESERVATIVES | | | ANALYSES REQUEST | REMARKS | |
|----------|--------------------|------|--------|----------|-------------------|---------------|--------------------------------|------------------|------------------|---------|--|
| | | | | | | UNPRESERVED | H ₂ SO ₄ | HNO ₃ | VOA | Aer. Eq | |
| 1 | MW-3 | 1330 | | 304125 | 4 | 4 | 1 | | | | |
| 2 | | | | | | | | | | | |
| 3 | | | | | | | | | | | |
| 4 | | | | | | | | | | | |
| 5 | | | | | | | | | | | |
| 6 | | | | | | | | | | | |
| 7 | | | | | | | | | | | |
| 8 | | | | | | | | | | | |

| COOLER NOS. | BAILERS | SHIPMENT METHOD | ITEM NUMBER | RELINQUISHED BY / AFFILIATION | ACCEPTED BY / AFFILIATION | DATE | TIME |
|-------------|---------------|-----------------|-------------|-------------------------------|---------------------------|------|------|
| OUT/DATE | RETURNED/DATE | | | | | | |
| | | | | | | | |

Additional Comments

Terence J. Bergerding AS

8/23/89 8:20

SEE REVERSE SIDE FOR INSTRUCTIONS

pace

laboratories, inc.

NO. 6829

CHAIN-OF-CUSTODY RECORD
Analytical Request
Client WCI

Report To: _____

Pace Client No. 019002

Address _____

Bill To: _____

Pace Project Manager OAC

Phone _____

P.O. # / Billing Reference _____

Pace Project No. 890822.200

Sampled By (PRINT):

Project Name / No. Aug-Sampling*Requested Due Date: 9-13-87Terence J. Borgerding

Sampler Signature

Date Sampled

Terence J. Borgerding

8/23/89

| ITEM NO. | SAMPLE DESCRIPTION | TIME | MATRIX | PACE NO. | NO OF CONTAINERS | PRESERVATIVES | | | ANALYSES REQUEST | REMARKS |
|-------------|--------------------|------|--------|----------|------------------|---------------|--------------------------------|------------------|---------------------|---------|
| | | | | | | UNPRESERVED | H ₂ SO ₄ | HNO ₃ | VOA | |
| 1 | Tr Blk | | | 30405 | 3 | | | | 3 | |
| 2 | MW-1 Blk | 1020 | | 06 | 3 | | | | 3 | |
| 3 | MW-1 | 1100 | | 07 | 6 | | | 1 | 4 | 1 |
| 4 | MW-2 Blk | 1120 | | 10 | 3 | | | | 3 | |
| 5 | MW-2 | 1200 | | 08 | 6 | | | 1 | 4 | 1 |
| 6 | MW-3 Blk | 1230 | | 11 | 3 | | | | 3 | |
| 7 | MW-3 | 1300 | | 09 | 6 | | | 1 | 4 | 1 |
| 8 | | | | | | | | | | |

| COOLER NOS. | BAILERS | SHIPMENT METHOD OUT/DATE | RETURNED/DATE | ITEM NUMBER | RELINQUISHED BY / AFFILIATION | ACCEPTED BY / AFFILIATION | DATE | TIME |
|-------------|---------|-----------------------------|---------------|----------------|-------------------------------|---------------------------|---------|------|
| | | | | 1-7 | Terence J. Borgerding | ASB | 8/23/89 | 8:10 |

Additional Comments

TAL-Metals see attached

SEE REVERSE SIDE FOR INSTRUCTIONS

ORIGINAL



UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 5
CHICAGO, ILLINOIS

RECEIVED

AUG 03 1989

MPCA, HAZARDOUS
WASTE DIVISION

JUL 25 1989

DATE:

SUBJECT: Review of Region 5 data for WCI FREEZER

FROM: Curtis Ross, Director Chuck Elby for
Region 5 Central Regional Laboratory

To: Data User:

Attached are the results for:

Soil Samples

CRL Data Set Numbers: RCRA 6294 CASE 12095

Sample Numbers: 89 KV01S01-S25 (20)

Parameter(s): VOLATILES

Laboratory: Gulf South Environmental Labs

Results Status:

- DATA ACCEPTABLE FOR USE* See Reviewer's Comments
 DATA QUALIFIED AS TO USE
 DATA UNACCEPTABLE FOR USE

* For data acceptability requirements, refer to the method capability statement
for the methods referenced.

Comments by the Quality Control Coordinator:

If there are any questions regarding the data, refer them to David Payne,
the Quality Control Coordinator, at 3-3805

Please sign and date this form below and return it with any comments to:

Sylvia Griffin
Data Management Coordinator
Region 5 Central Regional Laboratory
(5CRL)

RECEIVED BY
S. Griffin
JUL 25 1989

U.S. EPA CENTRAL
REGIONAL LAB

RECEIVED BY/DATE: -----

Comments:

DATA QUALIFIERS

Contractor: Gulf South Environmental
Labs

Case 12095 / RCRA
6294

Below is a summary of the out-of-control audits and the possible effect on the data for this case:

analysis performed.

I find no problems with the data package and I consider the data acceptable for use.

dat 7-24-89

Reviewed by:

Phone:

Date:

Diane Dennis-Flagler

7-24-89

GULF SOUTH ENVIRONMENTAL LABORATORY

formerly GSRI

Traffic Reports

Case 12095



United States Environmental Protection Agency
 Contract Laboratory Program Sample Management Office
 PO Box 818 Alexandria, VA 22313
 703-557-2490 FTS 557-2490

Organic Traffic Report
 (For CLP Use Only)

Case Number
12095

SAS No. (if applicable)

1. Sample Description (Enter in Column A)

1. Surface Water
2. Ground Water
3. Leachate
4. Runoff
5. Soil/Sediment
6. Oil (SAS)
7. Waste (SAS)
8. Other (SAS) (Specify)

2. Region Number
5 Sampling Co.
MPCA

Sampler (Name)
Ronnie Veach

3. Ship To:
Gulf Sci. Env. Lab.
6801 Press. Dr., E. Blk
New Orleans,
LA 70126

</div



**United States Environmental Protection Agency
Contract Laboratory Program Sample Management Office
PO Box 818 Alexandria, VA 22313
703-557-2490 FTS 557-2490**

Organic Traffic Report

(For CLP Use Only)

| | |
|----------------------|-------------------------|
| Case Number 13C75 | SAS No. (if applicable) |
|----------------------|-------------------------|

| 1. Sample Description (Enter in Column A) | | | 2. Region Number 5 | Sampling Co. MPCA | 4. Date Shipped 6/8/89 | Airbill Number 250882192 | 5. Date Received 6-10-89 | Received by Luis L. Baechele | | | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------------------------|-----------------------------|---------------------------------------------|-----------------------------------------------------------|------------------------------------------|------------------------------------------|-----------------------------|-------------------------------------|
| 1. Surface Water 2. Ground Water 3. Leachate 4. Rinsate 5. Soil/Sediment 6. Oil (SAS) 7. Waste (SAS) 8. Other (SAS) (Specify) | | | Sampler (Name) Kevin Veach | Carrier Airborn Express | | | | | | | | | |
| | | | 3. Ship To: Gulf South Env. Lab 6801 Press Dr. E.Bldg New Orleans, LA 70126 | Triple volume required for matrix spike/duplicate aqueous sample. Ship medium and high concentration samples in paint cans. | | 6. Transfer to | Date Received | | | | | | |
| | | | | See reverse for additional instructions. | | Received by | | | | | | | |
| | | | | | | Contract Number | Price | | | | | | |
| CLP Sample Number (From labels) | (A) Sample Descrip- tion (From box 1) | (B) Concen- tration L=low M=med H=high | (C) RAS Analysis | | | (D) Special Handling | (E) Station Location | (F) Date/Time of Sample Collection | (G) Corresponding CLP Inorganic Sample Number | (H) Sample Condition on Receipt | (I) High Conc Phases (Check below) | | |
| | | | VOA | BNA | Pest/ PCB | | | | | | Sol- id | Wa- ter- Mis- Liq. | Non- Wa- ter- Mis- Liq. |
| EEB 61 | S | L | X | | | | B-4 | 6/8 1000 | Meaz 24 | PARAMETER: | YES | NO | |
| EEB 63 | S | L | X | | | | B-4 | 6/8 1025 | Meaz 26 | ICE PRESENT? | ✓ | ✗ | |
| EEB 64 | S | L | X | | | | B-4 | 6/8 1045 | Meaz 27 | BOTTLES BROKEN? | ✓ | ✗ | |
| EEB 65 | S | L | X | | | | B-4 | 6/8 1100 | Meaz 28 | EPA TAG PRESENT? | ✓ | ✗ | |
| EEB 66 | S | L | X | | | | B-4 | 6/8 1110 | Meaz 29 | SHIPPING SEALS? | ✓ | ✗ | |
| EEB 69 | S | L | X | | | | B-5 | 6/8 1350 | Meaz 32 | CONTAINER SEALS? | ✓ | ✗ | |
| EEB 70 | S | L | X | | | | B-5 | 6/8 1400 | Meaz 33 | CUSTODY FORM OK? | ✓ | ✗ | |
| EEB 71 | S | L | X | | | | B-5 | 6/8 1415 | Meaz 34 | LABELS ACCURATE? | ✓ | ✗ | |
| EEB 72 | S | L | X | | | | B-5 | 6/8 1430 | Meaz 35 | NOTES/COMMENTS (if none) | | | |
| EEB 74 | S | L | X | | | | B-5 | 6/8 1450 | Meaz 37 | | | | |
| <p><i>SDG no. EEB 45</i> <i>Final SDG no. EEB 74</i></p> | | | | | | | | | | | | | |

GULF SOUTH ENVIRONMENTAL LABORATORY

formerly GSRI

Sample Data Package

EPA Contract No. 68-D9-0038

Project No. 6200-3026

Case 12095

Episode(s): CHN

Presented to:

U.S. Environmental Protection Agency
Sample Management Office
Contract Laboratory Program
209 Madison Street, Ste. 200
Alexandria, Virginia 22314

Present by:

Analytical Chemistry Department
Gulf South Environmental Laboratory, Inc.
P.O. Box 26518
New Orleans, Louisiana 70186

June 27, 1989

GULF SOUTH ENVIRONMENTAL LABORATORY

formerly GSRI

Narrative

Case 12095

Gulf South Environmental Laboratory
Case 12095

EPA Contract No. 68-D9-0038
SDG No. EEB45

Narrative

Case 12095 (SDG EEB45) consisted of twenty (20) soil samples which were received by Gulf South Environmental Laboratory on June 10, 1989 and logged in as Episode CHN. The samples were identified as follows:

| | | | |
|--------|--------|--------|--------|
| EEB-45 | EEB-53 | EEB-61 | EEB-69 |
| EEB-46 | EEB-55 | EEB-63 | EEB-70 |
| EEB-48 | EEB-56 | EEB-64 | EEB-71 |
| EEB-49 | EEB-58 | EEB-65 | EEB-72 |
| EEB-51 | EEB-60 | EEB-66 | EEB-74 |

The samples were analyzed for volatile organics only. Five additional samples, received on June 6, 1989 were reported as SDG EEB38.

No unusual problems were encountered with the analyses.

"I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature."



Richard R. Whitney , Ph.D.
GC/MS Laboratory Manager

6/27/89

Date

000001

ANALYTICAL CHEMISTRY DEPARTMENT

PERSONNEL SIGNATURE RECORD

| <u>NAME</u> | <u>POSITION</u> | <u>DATE</u> | <u>SIGNATURE</u> | <u>INITIALS</u> |
|---------------------|--------------------------|-------------|---------------------|-----------------|
| James E. Henderson | Project Manager | 1/10/89 | James E. Henderson | JEH |
| Richard R. Whitney | GC/MS Lab Manager | 1/10/89 | Richard R. Whitney | RRW |
| Cindy Palazzo | Report Center Manager | 1/10/89 | Cindy Palazzo | CP |
| Maude Young | Administrative Assistant | 1/10/89 | Maude Young | MY |
| Keith Rhode | Inorganics Lab Manager | 1/10/89 | Keith Rhode | KR |
| Mike Pearson | Prep Lab Manager | 1/10/89 | Mike Pearson | MPE |
| Al Jarquin | Mass Spec Operator | 1/10/89 | Al Jarquin | AJ |
| Marie Sears | Laboratory Technician | 1/10/89 | Marie Sears | MJS |
| Darryl Melcancon | Data Specialist | 1/10/89 | Darryl Melcancon | DFM |
| Hari Singh | Mass Spec Operator | 1/10/89 | Hari Singh | HJS |
| Homer Sheeler | Laboratory Technician | 1/10/89 | Homer Sheeler | HS |
| Sherry Phillips | Laboratory Technician | 1/10/89 | Sherry Phillips | SP |
| Shelley Antoine | Mass Spec Operator | 1/10/89 | Shelley Antoine | SA |
| Kevin Kern | Mass Spec Operator | 1/10/89 | Kevin Kern | K.K. |
| Joann McFall | Mass Spec Operator | 1/10/89 | Joann McFall | JM |
| Celia H. Mayuer | Data Specialist | 1/10/89 | Celia H. Mayuer | CHM |
| Timothy Morris | Laboratory Technician | 1/10/89 | Timothy Morris | TAM |
| Stephanie Fairchild | Laboratory Technician | 1/10/89 | Stephanie Fairchild | S.F. |
| Louis Nicosia | Laboratory Technician | 1/10/89 | Louis Nicosia | LN |
| Richard Prator | Laboratory Technician | 1/10/89 | Richard Prator | R.P. |

000002

ANALYTICAL CHEMISTRY DEPARTMENT

PERSONNEL SIGNATURE RECORD

000003

GULF SOUTH ENVIRONMENTAL LABORATORY

formerly GSRI

Volatile Fraction

Sample Data

Case 12095

B-2 0-15

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: G S E L IContract: 68-D9-0038EER45Lab Code: GULF Case No.: 12095 SAS No.: SDG No.: EER45Matrix: (soil/water) SOILLab Sample ID: CHNO1Sample wt/vol: 4.8 (g/mL) GLab File ID: VOCCHNO1Level: (low/med) LOWDate Received: 06/10/89% Moisture: not dec. 5Date Analyzed: 06/13/89Column: (pack/cap) PACKDilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/KG Q

| | | | |
|-----------------|----------------------------|----|----|
| 74-87-3----- | Chloromethane | 11 | :U |
| 74-83-9----- | Bromomethane | 11 | :U |
| 75-01-4----- | Vinyl Chloride | 11 | :U |
| 75-00-3----- | Chloroethane | 11 | :U |
| 75-09-2----- | Methylene Chloride | 45 | :U |
| 67-64-1----- | Acetone | 13 | :U |
| 75-15-0----- | Carbon Disulfide | 5 | :U |
| 75-35-4----- | 1,1-Dichloroethene | 5 | :U |
| 75-34-3----- | 1,1-Dichloroethane | 5 | :U |
| 540-59-0----- | 1,2-Dichloroethene (total) | 5 | :U |
| 67-66-3----- | Chloroform | 5 | :U |
| 107-06-2----- | 1,2-Dichloroethane | 5 | :U |
| 78-93-3----- | 2-Butanone | 11 | :U |
| 71-55-6----- | 1,1,1-Trichloroethane | 5 | :U |
| 56-23-5----- | Carbon Tetrachloride | 5 | :U |
| 108-05-4----- | Vinyl Acetate | 11 | :U |
| 75-27-4----- | Bromodichloromethane | 5 | :U |
| 78-87-5----- | 1,2-Dichloropropane | 5 | :U |
| 10061-01-5----- | cis-1,3-Dichloropropene | 5 | :U |
| 79-01-6----- | Trichloroethene | 5 | :U |
| 124-48-1----- | Dibromochloromethane | 5 | :U |
| 79-00-5----- | 1,1,2-Trichloroethane | 5 | :U |
| 71-43-2----- | Benzene | 5 | :U |
| 10061-02-6----- | Trans-1,3-Dichloropropene | 5 | :U |
| 75-25-2----- | Bromoform | 5 | :U |
| 108-10-1----- | 4-Methyl-2-Pentanone | 11 | :U |
| 591-78-6----- | 2-Hexanone | 11 | :U |
| 127-18-4----- | Tetrachloroethene | 5 | :U |
| 79-34-5----- | 1,1,2,2-Tetrachloroethane | 5 | :U |
| 108-88-3----- | Toluene | 5 | :U |
| 108-90-7----- | Chlorobenzene | 5 | :U |
| 100-41-4----- | Ethylbenzene | 5 | :U |
| 100-42-5----- | Styrene | 5 | :U |
| 1330-20-7----- | Xylene (total) | 5 | :U |

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EEB45

Lab Name: G S E L I

Contract: 68-D9-0038

Lab Code: GULF Case No.: 12095 SAS No.: _____ SDG No.: EEB45

Matrix: (soil/water) SOIL

Lab Sample ID: CHNO1

Sample wt/vol: 4.8 (g/mL) G

Lab File ID: VOCHNO1

Level: (low/med) LOW

Date Received: 06/10/89

% Moisture: not dec. 5

Date Analyzed: 06/13/89

Column (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------------|-------|------------|----|
| 1. | AIR (ARTIFACT) | 6.85 | 5.6 | BJ |
| 2. | UNKNOWN HYDROCARBON | 18.72 | 30 | J |
| 3. | UNKNOWN HYDROCARBON | 22.85 | 24 | J |
| 4. | UNKNOWN HYDROCARBON | 26.57 | 83 | J |

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

B-2 1/2-3

EPA SAMPLE NO.

Lab Name: G S E L IContract: 68-D9-0038

EEB46

Lab Code: GULFCase No.: 12095

SAS No.: _____

SDG.No.: EEB46Matrix: (soil/water) SOILLab Sample ID: CHN03Sample wt/vol: 4.7 (g/mL) GLab File ID: VOCHN03Level: (low/med) LOWDate Received: 06/10/89% Moisture: not dec. 5Date Analyzed: 06/13/89Column: (pack/cap) PACKDilution Factor: 1.00

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

0

| | | |
|------------------------------------------|----|---|
| 74-87-3-----Chloromethane | 11 | U |
| 74-83-9-----Bromomethane | 11 | U |
| 75-01-4-----Vinyl Chloride | 11 | U |
| 75-00-3-----Chloroethane | 11 | U |
| 75-09-2-----Methylene Chloride | 36 | B |
| 67-64-1-----Acetone | 12 | B |
| 75-15-0-----Carbon Disulfide | 6 | U |
| 75-35-4-----1,1-Dichloroethene | 6 | U |
| 75-34-3-----1,1-Dichloroethane | 6 | U |
| 540-59-0-----1,2-Dichloroethene (total) | 6 | U |
| 67-66-3-----Chloroform | 6 | U |
| 107-06-2-----1,2-Dichloroethane | 6 | U |
| 78-93-3-----2-Butanone | 11 | U |
| 71-55-6-----1,1,1-Trichloroethane | 6 | U |
| 56-23-5-----Carbon Tetrachloride | 6 | U |
| 108-05-4-----Vinyl Acetate | 11 | U |
| 75-27-4-----Bromodichloromethane | 6 | U |
| 78-87-5-----1,2-Dichloropropane | 6 | U |
| 10061-01-5-----cis-1,3-Dichloropropene | 6 | U |
| 79-01-6-----Trichloroethene | 6 | U |
| 124-48-1-----Dibromochloromethane | 6 | U |
| 79-00-5-----1,1,2-Trichloroethane | 6 | U |
| 71-43-2-----Benzene | 6 | U |
| 10061-02-6-----Trans-1,3-Dichloropropene | 6 | U |
| 75-25-2-----Bromoform | 6 | U |
| 108-10-1-----4-Methyl-2-Pentanone | 11 | U |
| 591-78-6-----2-Hexanone | 11 | U |
| 127-18-4-----Tetrachloroethene | 6 | U |
| 79-34-5-----1,1,2,2-Tetrachloroethane | 6 | U |
| 108-88-3-----Toluene | 6 | U |
| 108-90-7-----Chlorobenzene | 6 | U |
| 100-41-4-----Ethylbenzene | 6 | U |
| 100-42-5-----Styrene | 6 | U |
| 1330-20-7-----Xylene (total) | 6 | U |

000042

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: G S E L I

Contract: 68-D9-0038

EEB46

Lab Code: GULF Case No.: 12095 SAS No.: SDG No.: EEB45

Matrix: (soil/water) SOIL

Lab Sample ID: CHNO3

Sample wt/vol: 4.7 (g/mL) G

Lab File ID: VOCHNO3

Level: (low/med) LOW

Date Received: 06/10/89

% Moisture: not dec. 5

Date Analyzed: 06/13/89

Column (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------------|-------|------------|----|
| 1. | AIR (ARTIFACT) | 8.12 | 20 | BJ |
| 2. | UNKNOWN HYDROCARBON | 18.64 | 21 | J |
| 3. | UNKNOWN HYDROCARBON | 22.77 | 18 | BJ |
| 4. | UNKNOWN | 26.46 | 64 | J |
| 5. | UNKNOWN HYDROCARBON | 30.46 | 73 | J |

B-2 62-8

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: G S E L I Contract: 68-D9-0038EEB48Lab Code: GULF Case No.: 12095 SAS No.: SDG No.: EEB48Matrix: (soil/water) SOIL Lab Sample ID: CHNO5Sample wt/vol: 4.7 (g/mL) G Lab File ID: VOCHNO5Level: (low/med) LOW Date Received: 06/10/89% Moisture: not dec. 6 Date Analyzed: 06/14/89Column: (pack/cap) FACT Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/KG

| | | | |
|-----------------|----------------------------|----|----|
| 74-87-3----- | Chloromethane | 11 | UG |
| 74-83-9----- | Bromomethane | 11 | UG |
| 75-01-4----- | Vinyl Chloride | 11 | UG |
| 75-00-3----- | Chloroethane | 11 | UG |
| 75-09-2----- | Methylene Chloride | 32 | UG |
| 67-64-1----- | Acetone | 15 | UG |
| 75-13-0----- | Carbon Disulfide | 6 | UG |
| 75-35-4----- | 1,1-Dichloroethene | 6 | UG |
| 75-34-3----- | 1,1-Dichloroethane | 6 | UG |
| 540-59-0----- | 1,2-Dichloroethene (total) | 6 | UG |
| 67-66-3----- | Chloroform | 6 | UG |
| 107-06-2----- | 1,2-Dichloroethane | 6 | UG |
| 78-93-3----- | 2-Butanone | 11 | UG |
| 71-55-6----- | 1,1,1-Trichloroethane | 6 | UG |
| 56-23-5----- | Carbon Tetrachloride | 6 | UG |
| 108-05-4----- | Vinyl Acetate | 11 | UG |
| 75-27-4----- | Bromodichloromethane | 6 | UG |
| 78-87-5----- | 1,2-Dichloropropane | 6 | UG |
| 10061-01-5----- | cis-1,3-Dichloropropene | 6 | UG |
| 79-01-6----- | Trichloroethene | 6 | UG |
| 124-48-1----- | Dibromochloromethane | 6 | UG |
| 79-00-5----- | 1,1,2-Trichloroethane | 6 | UG |
| 71-43-2----- | Benzene | 6 | UG |
| 10061-02-6----- | Trans-1,3-Dichloropropene | 6 | UG |
| 75-25-2----- | Bromoform | 6 | UG |
| 108-10-1----- | 4-Methyl-2-Fantanone | 11 | UG |
| 591-78-6----- | 2-Hexanone | 11 | UG |
| 127-18-4----- | Tetrachloroethene | 6 | UG |
| 79-34-5----- | 1,1,2,2-Tetrachloroethane | 6 | UG |
| 108-88-3----- | Toluene | 6 | UG |
| 108-90-7----- | Chlorobenzene | 6 | UG |
| 100-41-4----- | Ethylbenzene | 6 | UG |
| 100-42-5----- | Styrene | 6 | UG |
| 1330-20-7----- | Xylene (total) | 6 | UG |

B-2 9-10 1/2

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: G S E L IContract: 68-D9-0038

EEB49

Lab Code: GULF Case No.: 12095 SAS No.: SDG No.: EEB45Matrix: (soil/water) SOILLab Sample ID: CHN07Sample wt/vol: 4.9 (g/mL) GLab File ID: VOCHN07Level: (low/med) LOWDate Received: 06/10/89% Moisture: not dec. 8Date Analyzed: 06/14/89Column: (pack/cap) PACKDilution Factor: 1.00

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

Q

| | | |
|------------------------------------------|----|---|
| 74-87-3-----Chloromethane | 11 | U |
| 74-83-9-----Bromomethane | 11 | U |
| 75-01-4-----Vinyl Chloride | 11 | U |
| 75-00-3-----Chloroethane | 11 | U |
| 75-09-2-----Methylene Chloride | 29 | B |
| 67-64-1-----Acetone | 16 | B |
| 75-15-0-----Carbon Disulfide | 6 | U |
| 75-35-4-----1,1-Dichloroethene | 6 | U |
| 75-34-3-----1,1-Dichloroethane | 6 | U |
| 540-59-0-----1,2-Dichloroethene (total) | 6 | U |
| 67-66-3-----Chloroform | 6 | U |
| 107-06-2-----1,2-Dichloroethane | 6 | U |
| 76-93-3-----2-Butanone | 34 | |
| 71-55-6-----1,1,1-Trichloroethane | 6 | U |
| 56-23-5-----Carbon Tetrachloride | 6 | U |
| 108-05-4-----Vinyl Acetate | 11 | U |
| 75-27-4-----Bromodichloromethane | 6 | U |
| 78-87-5-----1,2-Dichloropropane | 6 | U |
| 10061-01-5-----cis-1,3-Dichloropropene | 6 | U |
| 79-01-6-----Trichloroethene | 6 | U |
| 124-48-1-----Dibromochloromethane | 6 | U |
| 79-00-5-----1,1,2-Trichloroethane | 6 | U |
| 71-43-2-----Benzene | 6 | U |
| 10061-02-6-----Trans-1,3-Dichloropropene | 6 | U |
| 75-25-2-----Bromoform | 6 | U |
| 108-10-1-----4-Methyl-2-Pentanone | 11 | U |
| 591-78-6-----2-Hexanone | 11 | U |
| 127-18-4-----Tetrachloroethene | 6 | U |
| 79-34-5-----1,1,2,2-Tetrachloroethane | 6 | U |
| 108-88-3-----Toluene | 6 | U |
| 108-90-7-----Chlorobenzene | 6 | U |
| 100-41-4-----Ethylbenzene | 6 | U |
| 100-42-5-----Styrene | 6 | U |
| 1330-20-7-----Xylene (total) | 6 | U |

000082

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EFA SAMPLE NO.

Lab Name: G S E L I

Contract: 68-D9-0038

EEB49

Lab Code: GULF Case No.: 12095 SAS No.: _____ SDG No.: EEB45

Matrix: (soil/water) SOIL

Lab Sample ID: CHN07

Sample wt/vol: 4.9 (g/mL) G

Lab File ID: VOCCHN07

Level: (low/med) LOW

Date Received: 06/10/89

% Moisture: not dec. 8

Date Analyzed: 06/14/89

Column (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 1

(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|----------------|------|------------|---|
| 1. | AIR (ARTIFACT) | 7.02 | 5.5 | J |

000083

B-2 13-14½

EPA SAMPLE NO.

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EEB51

Lab Name: G S E L I

Contract: 68-D9-0038

Lab Code: GULF

Case No.: 12095

SAS No.: _____

SDG No.: EEB45

Matrix: (soil/water) SOIL

Lab Sample ID: CHN09

Sample wt/vol: 4.6 (g/mL) G

Lab File ID: VOCHN09

Level: (low/med) LOW

Date Received: 06/10/89

% Moisture: not dec. 3

Date Analyzed: 06/14/89

Column: (pack/cap) PACK

Dilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/KG Q

| | | |
|------------------------------------------|----|---|
| 74-87-3-----Chloromethane | 11 | U |
| 74-83-9-----Bromomethane | 11 | U |
| 75-01-4-----Vinyl Chloride | 11 | U |
| 75-00-3-----Chloroethane | 11 | U |
| 75-09-2-----Methylene Chloride | 31 | B |
| 67-64-1-----Acetone | 50 | B |
| 75-15-0-----Carbon Disulfide | 6 | U |
| 75-35-4-----1,1-Dichloroethene | 6 | U |
| 75-34-3-----1,1-Dichloroethane | 6 | U |
| 540-59-0-----1,2-Dichloroethene (total) | 6 | U |
| 67-66-3-----Chloroform | 6 | U |
| 107-06-2-----1,2-Dichloroethane | 6 | U |
| 78-93-3-----2-Butanone | 37 | |
| 71-55-6-----1,1,1-Trichloroethane | 6 | U |
| 56-23-5-----Carbon Tetrachloride | 6 | U |
| 108-05-4-----Vinyl Acetate | 11 | U |
| 75-27-4-----Bromodichloromethane | 6 | U |
| 78-87-5-----1,2-Dichloropropane | 6 | U |
| 10061-01-5-----cis-1,3-Dichloropropene | 6 | U |
| 79-01-6-----Trichloroethene | 6 | U |
| 124-48-1-----Dibromochloromethane | 6 | U |
| 79-00-5-----1,1,2-Trichloroethane | 6 | U |
| 71-43-2-----Benzene | 6 | U |
| 10061-02-6-----Trans-1,3-Dichloropropene | 6 | U |
| 75-25-2-----Bromoform | 6 | U |
| 108-10-1-----4-Methyl-2-Pentanone | 11 | U |
| 591-78-6-----2-Hexanone | 11 | U |
| 127-18-4-----Tetrachloroethene | 6 | U |
| 79-34-5-----1,1,2,2-Tetrachloroethane | 6 | U |
| 108-88-3-----Toluene | 6 | U |
| 108-90-7-----Chlorobenzene | 6 | U |
| 100-41-4-----Ethylbenzene | 6 | U |
| 100-42-5-----Styrene | 6 | U |
| 1330-20-7-----Xylene (total) | 6 | U |

RIC
06/16/89 20:57:00

DATA: UOCHN39 #1
CALI: UOCHN39 #3

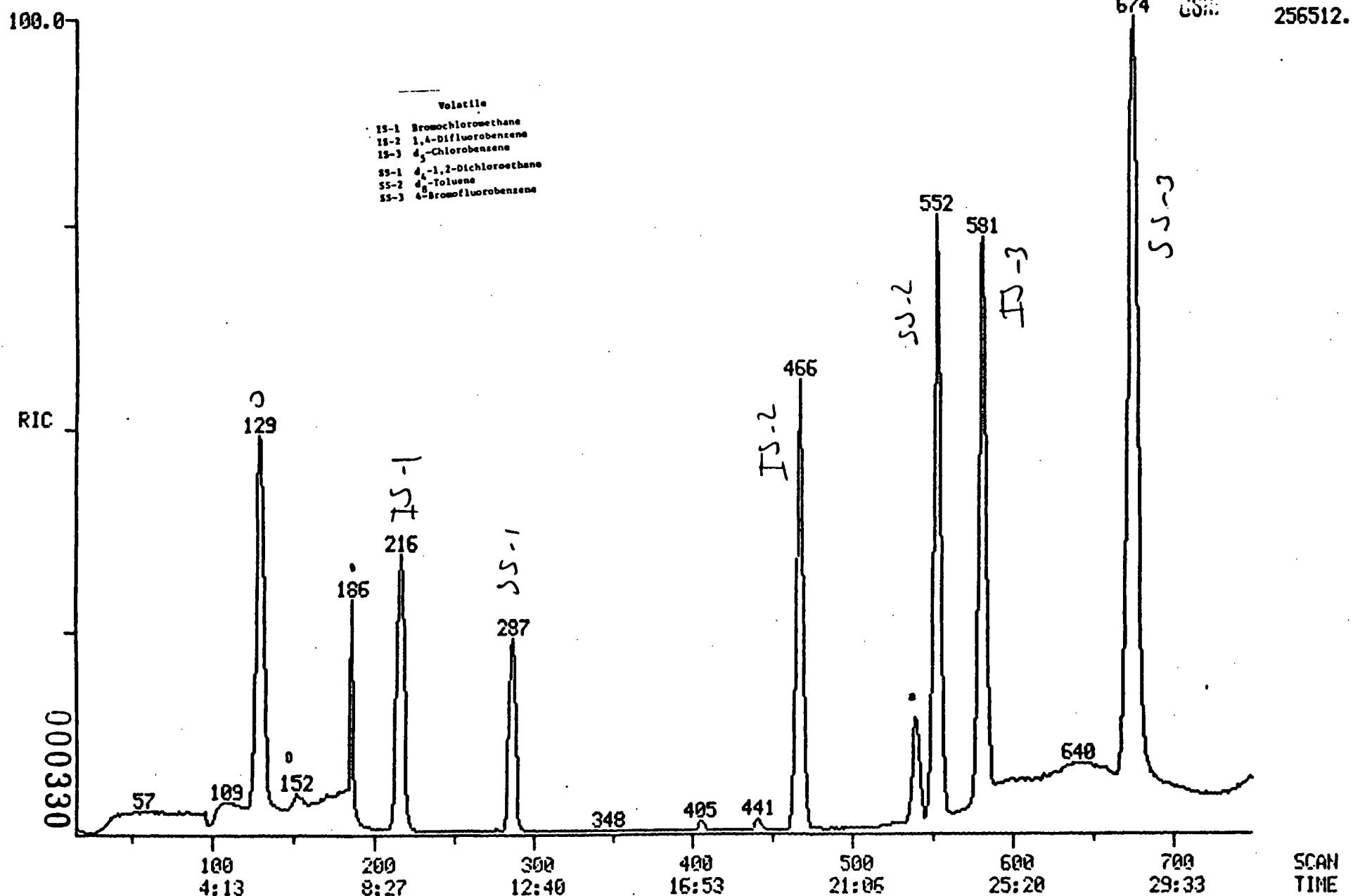
SCANS 15 TO 749

SAMPLE: EEB74 (LOW SOIL 4.7 GRS) CASE: 12095
COND.: 12 SP-1000/CARB B 45/4-220@10 INST E
RANGE: G 1, 749 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

REVIEWED

JUN 18 1989

AJ



1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: G S E L I Contract: 68-D9-0038

EEB74

Lab Code: GULF Case No.: 12095 SAS No.: SDG No.: EEB45

Matrix: (soil/water) SOIL Lab Sample ID: CHN39

Sample wt/vol: 4.7 (g/mL) G Lab File ID: VOCHN39

Level: (low/med) LOW Date Received: 06/10/89

% Moisture: not dec. 13 Date Analyzed: 06/16/89

Column (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 2 (ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------------|-------|------------|----|
| 1. | AIR (ARTIFACT) | 7.85 | 19 | BJ |
| 2. | UNKNOWN HYDROCARBON | 22.75 | 14 | BJ |

000329

B-5 24-25 1/2

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: G S E L IContract: 68-D9-0038

EEB74

Lab Code: GULFCase No.: 12095

SAS No.: _____

SDG No.: EEB45Matrix: (soil/water) SOILLab Sample ID: CHN39Sample wt/vol: 4.7 (g/mL) GLab File ID: VOCHN39Level: (low/med) LOWDate Received: 06/10/89% Moisture: not dec. 13Date Analyzed: 06/16/89Column: (pack/cap) PACKDilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u> | Q |
|-----------------|----------------------------|------------------------------------------------------|---|
| 74-87-3----- | Chloromethane | 12 | U |
| 74-83-9----- | Bromomethane | 12 | U |
| 75-01-4----- | Vinyl Chloride | 12 | U |
| 75-00-3----- | Chloroethane | 12 | U |
| 75-09-2----- | Methylene Chloride | 61 | B |
| 67-64-1----- | Acetone | 22 | B |
| 75-15-0----- | Carbon Disulfide | 6 | U |
| 75-35-4----- | 1,1-Dichloroethene | 6 | U |
| 75-34-3----- | 1,1-Dichloroethane | 6 | U |
| 540-59-0----- | 1,2-Dichloroethene (total) | 6 | U |
| 67-66-3----- | Chloroform | 6 | U |
| 107-06-2----- | 1,2-Dichloroethane | 6 | U |
| 78-93-3----- | 2-Butanone | 12 | U |
| 71-55-6----- | 1,1,1-Trichloroethane | 6 | U |
| 56-23-5----- | Carbon Tetrachloride | 6 | U |
| 108-05-4----- | Vinyl Acetate | 12 | U |
| 75-27-4----- | Bromodichloromethane | 6 | U |
| 78-87-5----- | 1,2-Dichloropropane | 6 | U |
| 10061-01-5----- | cis-1,3-Dichloropropene | 6 | U |
| 79-01-6----- | Trichloroethene | 6 | U |
| 124-48-1----- | Dibromochloromethane | 6 | U |
| 79-00-5----- | 1,1,2-Trichloroethane | 6 | U |
| 71-43-2----- | Benzene | 6 | U |
| 10061-02-6----- | Trans-1,3-Dichloropropene | 6 | U |
| 75-25-2----- | Bromoform | 6 | U |
| 108-10-1----- | 4-Methyl-2-Pentanone | 12 | U |
| 591-78-6----- | 2-Hexanone | 12 | U |
| 127-18-4----- | Tetrachloroethene | 6 | U |
| 79-34-5----- | 1,1,2,2-Tetrachloroethane | 6 | U |
| 108-88-3----- | Toluene | 6 | U |
| 108-90-7----- | Chlorobenzene | 6 | U |
| 100-41-4----- | Ethylbenzene | 6 | U |
| 100-42-5----- | Styrene | 6 | U |
| 1330-20-7----- | Xylene (total) | 6 | U |

000328

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EEB72

Lab Name: G S E L I

Contract: 68-D9-0038

Lab Code: GULF Case No.: 12095 SAS No.: SDG No.: EEB45

Matrix: (soil/water) SOIL Lab Sample ID: CHN37

Sample wt/vol: 5.0 (g/mL) G Lab File ID: VOCCHN37

Level: (low/med) LOW Date Received: 06/10/89

% Moisture: not dec. 18 Date Analyzed: 06/15/89

Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 2 (ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | O |
|------------|---------------------|-------|------------|-----|
| 1. | AIR (ARTIFACT) | 7.85 | 23 | 0.0 |
| 2. | UNKNOWN HYDROCARBON | 22.72 | 24 | 0.0 |

B-5 19-20 1/2

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: G S E L IContract: 68-D9-0038EEB72Lab Code: GULFCase No.: 12095

SAS No.: _____

SDG No.: EEB45Matrix: (soil/water) SOILLab Sample ID: CHN37Sample wt/vol: 5.0 (g/mL) GLab File ID: VOCHN37Level: (low/med) LOWDate Received: 06/10/89% Moisture: not dec. 18Date Analyzed: 06/16/89Column: (pack/cap) PACKDilution Factor: 1.0

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

Q

| | | |
|------------------------------------------|----|-----|
| 74-87-3-----Chloromethane | 12 | U |
| 74-83-9-----Bromomethane | 12 | U |
| 75-01-4-----Vinyl Chloride | 12 | U |
| 75-00-3-----Chloroethane | 12 | U |
| 75-09-2-----Methylene Chloride | 70 | I/B |
| 67-64-1-----Acetone | 74 | I/B |
| 75-15-0-----Carbon Disulfide | 6 | U |
| 75-35-4-----1,1-Dichloroethene | 6 | U |
| 75-34-3-----1,1-Dichloroethane | 6 | U |
| 540-59-0-----1,2-Dichloroethene (total) | 6 | U |
| 67-66-3-----Chloroform | 6 | U |
| 107-06-2-----1,2-Dichloroethane | 6 | U |
| 78-93-3-----2-Butanone | 12 | U |
| 71-55-6-----1,1,1-Trichloroethane | 6 | U |
| 56-23-5-----Carbon Tetrachloride | 6 | U |
| 108-05-4-----Vinyl Acetate | 12 | U |
| 75-27-4-----Bromodichloromethane | 6 | U |
| 78-87-5-----1,2-Dichloropropane | 6 | U |
| 10061-01-5-----cis-1,3-Dichloropropene | 6 | U |
| 79-01-6-----Trichloroethene | 6 | U |
| 124-48-1-----Dibromochloromethane | 6 | U |
| 79-00-5-----1,1,2-Trichloroethane | 6 | U |
| 71-43-2-----Benzene | 6 | U |
| 10061-02-6-----Trans-1,3-Dichloropropene | 6 | U |
| 75-25-2-----Bromoform | 6 | U |
| 108-10-1-----4-Methyl-2-Pentanone | 12 | U |
| 591-78-6-----2-Hexanone | 12 | U |
| 127-18-4-----Tetrachloroethene | 6 | U |
| 79-34-5-----1,1,2,2-Tetrachloroethane | 6 | U |
| 108-88-3-----Toluene | 6 | U |
| 108-90-7-----Chlorobenzene | 6 | U |
| 100-41-4-----Ethylbenzene | 6 | U |
| 100-42-5-----Styrene | 6 | U |
| 1330-20-7-----Xylene (total) | 6 | U |

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: G S E L I Contract: 68-D9-0038

EEB71

Lab Code: GULF Case No.: 12095 SAS No.: SDG No.: EEB45

Matrix: (soil/water) SOIL Lab Sample ID: CHN35

Sample wt/vol: 4.5 (g/mL) G Lab File ID: VOCHN35

Level: (low/med) LOW Date Received: 06/10/89

% Moisture: not dec. 15 Date Analyzed: 06/19/89

Column (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:
Number TICs found: 2 (ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------------|-------|------------|----|
| 1. | AIR (ARTIFACT) | 7.10 | 9.3 | EJ |
| 2. | UNKNOWN HYDROCARBON | 22.84 | 14 | J |

B-5 16¹₂-18

EPA SAMPLE NO.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEETLab Name: G S E L IContract: 68-D9-0038EEB71Lab Code: GULFCase No.: 12095

SAS No.: _____

SDG No.: EEB45Matrix: (soil/water) SOILLab Sample ID: CHN35Sample wt/vol: 4.5 (g/mL) GLab File ID: VOCHN35Level: (low/med) LOWDate Received: 06/10/89% Moisture: not dec. 15Date Analyzed: 06/19/89Column: (pack/cap) PACKDilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/KG Q

| | | | |
|-----------------|----------------------------|----|-----|
| 74-87-3----- | Chloromethane | 13 | U |
| 74-83-9----- | Bromomethane | 13 | U |
| 75-01-4----- | Vinyl Chloride | 13 | U |
| 75-00-3----- | Chloroethane | 13 | U |
| 75-09-2----- | Methylene Chloride | 49 | I/B |
| 67-64-1----- | Acetone | 25 | U |
| 75-15-0----- | Carbon Disulfide | 7 | U |
| 75-35-4----- | 1,1-Dichloroethene | 7 | U |
| 75-34-3----- | 1,1-Dichloroethane | 7 | U |
| 540-59-0----- | 1,2-Dichloroethene (total) | 7 | U |
| 67-66-3----- | Chloroform | 7 | U |
| 107-06-2----- | 1,2-Dichloroethane | 7 | U |
| 78-93-3----- | 2-Butanone | 13 | U |
| 71-55-6----- | 1,1,1-Trichloroethane | 7 | U |
| 56-23-5----- | Carbon Tetrachloride | 7 | U |
| 108-05-4----- | Vinyl Acetate | 13 | U |
| 75-27-4----- | Bromodichloromethane | 7 | U |
| 78-87-5----- | 1,2-Dichloropropane | 7 | U |
| 10061-01-5----- | cis-1,3-Dichloropropene | 7 | U |
| 79-01-6----- | Trichloroethene | 7 | U |
| 124-48-1----- | Dibromochloromethane | 7 | U |
| 79-00-5----- | 1,1,2-Trichloroethane | 7 | U |
| 71-43-2----- | Benzene | 7 | U |
| 10061-02-6----- | Trans-1,3-Dichloropropene | 7 | U |
| 75-25-2----- | Bromoform | 7 | U |
| 108-10-1----- | 4-Methyl-2-Pentanone | 13 | U |
| 591-78-6----- | 2-Hexanone | 13 | U |
| 127-18-4----- | Tetrachloroethene | 7 | U |
| 79-34-5----- | 1,1,2,2-Tetrachloroethane | 7 | U |
| 108-88-3----- | Toluene | 7 | U |
| 108-90-7----- | Chlorobenzene | 7 | U |
| 100-41-4----- | Ethylbenzene | 7 | U |
| 100-42-5----- | Styrene | 7 | U |
| 1330-20-7----- | Xylene (total) | 7 | U |

Lif
7-24-89

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: G S E L I Contract: 68-D9-0038 EEB70

Lab Code: GULF Case No.: 12095 SAS No.: SDG No.: EEB45

Matrix: (soil/water) SOIL Lab Sample ID: CHN33

Sample wt/vol: 5.0 (g/mL) G Lab File ID: VOCHN33

Level: (low/med) LOW Date Received: 06/10/89

% Moisture: not dec. 11 Date Analyzed: 06/16/89

Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 2 (ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------------|-------|------------|----|
| 1. | AIR (ARTIFACT) | 7.98 | 20 | BJ |
| 2. | UNKNOWN HYDROCARBON | 22.75 | 10 | BJ |

000284

B-5 14-15½

EPA SAMPLE NO.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEETLab Name: G S E L IContract: 68-D9-0038EEB70Lab Code: GULF Case No.: 12095 SAS No.: _____ SDG No.: EEB45Matrix: (soil/water) SOILLab Sample ID: CHN33Sample wt/vol: 5.0 (g/mL) GLab File ID: VOCHN33Level: (low/med) LOWDate Received: 06/10/89% Moisture: not dec. 11Date Analyzed: 06/16/89Column: (pack/cap) PACKDilution Factor: 1.0

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

Q

| | | |
|-------------------------------------------------|-----------|----------|
| <u>74-87-3-----Chloromethane</u> | <u>11</u> | <u>U</u> |
| <u>74-23-9-----Bromomethane</u> | <u>11</u> | <u>U</u> |
| <u>75-01-4-----Vinyl Chloride</u> | <u>11</u> | <u>U</u> |
| <u>75-00-3-----Chloroethane</u> | <u>11</u> | <u>U</u> |
| <u>75-09-2-----Methylene Chloride</u> | <u>58</u> | <u>B</u> |
| <u>67-64-1-----Acetone</u> | <u>19</u> | <u>B</u> |
| <u>75-15-0-----Carbon Disulfide</u> | <u>6</u> | <u>U</u> |
| <u>75-35-4-----1,1-Dichloroethene</u> | <u>6</u> | <u>U</u> |
| <u>75-34-3-----1,1-Dichloroethane</u> | <u>6</u> | <u>U</u> |
| <u>540-59-0-----1,2-Dichloroethene (total)</u> | <u>6</u> | <u>U</u> |
| <u>67-66-3-----Chloroform</u> | <u>6</u> | <u>U</u> |
| <u>107-06-2-----1,2-Dichloroethane</u> | <u>6</u> | <u>U</u> |
| <u>78-93-3-----2-Butanone</u> | <u>11</u> | <u>U</u> |
| <u>71-55-6-----1,1,1-Trichloroethane</u> | <u>6</u> | <u>U</u> |
| <u>56-23-5-----Carbon Tetrachloride</u> | <u>6</u> | <u>U</u> |
| <u>108-05-4-----Vinyl Acetate</u> | <u>11</u> | <u>U</u> |
| <u>75-27-4-----Bromodichloromethane</u> | <u>6</u> | <u>U</u> |
| <u>78-87-5-----1,2-Dichloropropane</u> | <u>6</u> | <u>U</u> |
| <u>10061-01-5-----cis-1,3-Dichloropropene</u> | <u>6</u> | <u>U</u> |
| <u>79-01-6-----Trichloroethene</u> | <u>6</u> | <u>U</u> |
| <u>124-48-1-----Dibromochloromethane</u> | <u>6</u> | <u>U</u> |
| <u>79-00-5-----1,1,2-Trichloroethane</u> | <u>6</u> | <u>U</u> |
| <u>71-43-2-----Benzene</u> | <u>6</u> | <u>U</u> |
| <u>10061-02-6-----Trans-1,3-Dichloropropene</u> | <u>6</u> | <u>U</u> |
| <u>75-25-2-----Bromoform</u> | <u>6</u> | <u>U</u> |
| <u>108-10-1-----4-Methyl-2-Pentanone</u> | <u>11</u> | <u>U</u> |
| <u>591-78-6-----2-Hexanone</u> | <u>11</u> | <u>U</u> |
| <u>127-18-4-----Tetrachloroethene</u> | <u>6</u> | <u>U</u> |
| <u>79-34-5-----1,1,2,2-Tetrachloroethane</u> | <u>6</u> | <u>U</u> |
| <u>108-88-3-----Toluene</u> | <u>6</u> | <u>U</u> |
| <u>108-90-7-----Chlorobenzene</u> | <u>6</u> | <u>U</u> |
| <u>100-41-4-----Ethylbenzene</u> | <u>6</u> | <u>U</u> |
| <u>100-42-5-----Styrene</u> | <u>6</u> | <u>U</u> |
| <u>1330-20-7-----Xylene (total)</u> | <u>6</u> | <u>U</u> |

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: G S E L I

Contract: 68-D9-0038

EEB69

Lab Code: GULF

Case No.: 12095

SAS No.: _____

SDG No.: EEB45

Matrix: (soil/water) SOIL

Lab Sample ID: CHN31

Sample wt/vol: 4.7 (g/mL) G

Lab File ID: VOCHN31

Level: (low/med) LOW

Date Received: 06/10/89

% Moisture: not dec. 20

Date Analyzed: 06/16/89

Column (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 2

(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------------|-------|------------|----|
| 1. | AIR (ARTIFACT) | 8.07 | 24 | BJ |
| 2. | UNKNOWN HYDROCARBON | 22.80 | 11 | BJ |

B-5 11¹₂-13

EPA SAMPLE NO.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEETLab Name: G S E L IContract: 68-D9-0038EEB69Lab Code: GULFCase No.: 12095

SAS No.: _____

SDG No.: EEB45Matrix: (soil/water) SOILLab Sample ID: CHN31Sample wt/vol: 4.7 (g/mL) GLab File ID: VOCHN31Level: (low/med) LOWDate Received: 06/10/89% Moisture: not dec. 20Date Analyzed: 06/16/89Column: (pack/cap) PACKDilution Factor: 1.00

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

Q

| | | |
|------------------------------------------|-----|---|
| 74-87-3-----Chloromethane | 13 | U |
| 74-83-9-----Bromomethane | 13 | U |
| 75-01-4-----Vinyl Chloride | 13 | U |
| 75-00-3-----Chloroethane | 13 | U |
| 75-09-2-----Methylene Chloride | 69 | B |
| 67-64-1-----Acetone | 120 | B |
| 75-15-0-----Carbon Disulfide | 7 | U |
| 75-35-4-----1,1-Dichloroethene | 7 | U |
| 75-34-3-----1,1-Dichloroethane | 7 | U |
| 540-59-0-----1,2-Dichloroethene (total) | 7 | U |
| 67-66-3-----Chloroform | 7 | U |
| 107-06-2-----1,2-Dichloroethane | 7 | U |
| 78-93-3-----2-Butanone | 13 | U |
| 71-55-6-----1,1,1-Trichloroethane | 7 | U |
| 56-23-5-----Carbon Tetrachloride | 7 | U |
| 108-05-4-----Vinyl Acetate | 13 | U |
| 75-27-4-----Bromodichloromethane | 7 | U |
| 78-87-5-----1,2-Dichloropropane | 7 | U |
| 10061-01-5-----cis-1,3-Dichloropropene | 7 | U |
| 79-01-6-----Trichloroethene | 7 | U |
| 124-48-1-----Dibromochloromethane | 7 | U |
| 79-00-5-----1,1,2-Trichloroethane | 7 | U |
| 71-43-2-----Benzene | 7 | U |
| 10061-02-6-----Trans-1,3-Dichloropropene | 7 | U |
| 75-25-2-----Bromoform | 7 | U |
| 108-10-1-----4-Methyl-2-Pentanone | 13 | U |
| 591-78-6-----2-Hexanone | 13 | U |
| 127-18-4-----Tetrachloroethene | 7 | U |
| 79-34-5-----1,1,2,2-Tetrachloroethane | 7 | U |
| 108-88-3-----Toluene | 7 | U |
| 108-90-7-----Chlorobenzene | 7 | U |
| 100-41-4-----Ethylbenzene | 7 | U |
| 100-42-5-----Styrene | 7 | U |
| 1330-20-7-----Xylene (total) | 7 | U |

000268

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EEB66

Lab Name: G S E L I

Contract: 68-D9-0038

Lab Code: GULF Case No.: 12095 SAS No.: _____ SDG No.: EEB45

Matrix: (soil/water) SOIL

Lab Sample ID: CHN29

Sample wt/vol: 4.8 (g/mL) G

Lab File ID: VOCHN29

Level: (low/med) LOW

Date Received: 06/10/89

% Moisture: not dec. 8

Date Analyzed: 06/16/89

Column (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 2

(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------------|-------|------------|----|
| 1. | AIR (ARTIFACT) | 7.47 | 15 | BJ |
| 2. | UNKNOWN HYDROCARBON | 22.80 | 11 | BJ |

000254

B-4 20'z-22

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: G S E L I Contract: 68-D9-0038 EEB66Lab Code: GULF Case No.: 12095 SAS No.: _____ SDG No.: EEB45Matrix: (soil/water) SOIL Lab Sample ID: CHN29Sample wt/vol: 4.8 (g/mL) G Lab File ID: VOCHN29Level: (low/med) LOW Date Received: 06/10/89% Moisture: not dec. 8 Date Analyzed: 06/16/89Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/KG Q

| | | | |
|-----------------|----------------------------|----|----|
| 74-87-3----- | Chloromethane | 11 | :U |
| 74-83-9----- | Bromomethane | 11 | :U |
| 75-01-4----- | Vinyl Chloride | 11 | :U |
| 75-00-3----- | Chloroethane | 11 | :U |
| 75-09-2----- | Methylene Chloride | 63 | :B |
| 67-64-1----- | Acetone | 30 | :B |
| 75-15-0----- | Carbon Disulfide | 6 | :U |
| 75-35-4----- | 1,1-Dichloroethene | 6 | :U |
| 75-34-3----- | 1,1-Dichloroethane | 6 | :U |
| 540-59-0----- | 1,2-Dichloroethene (total) | 6 | :U |
| 67-66-3----- | Chloroform | 6 | :U |
| 107-06-2----- | 1,2-Dichloroethane | 6 | :U |
| 78-93-3----- | 2-Butanone | 11 | :U |
| 71-55-6----- | 1,1,1-Trichloroethane | 6 | :U |
| 56-23-5----- | Carbon Tetrachloride | 6 | :U |
| 108-05-4----- | Vinyl Acetate | 11 | :U |
| 75-27-4----- | Bromodichloromethane | 6 | :U |
| 78-87-5----- | 1,2-Dichloropropane | 6 | :U |
| 10061-01-5----- | cis-1,3-Dichloropropene | 6 | :U |
| 79-01-6----- | Trichloroethene | 6 | :U |
| 124-48-1----- | Dibromochloromethane | 6 | :U |
| 79-00-5----- | 1,1,2-Trichloroethane | 6 | :U |
| 71-43-2----- | Benzene | 6 | :U |
| 10061-02-6----- | Trans-1,3-Dichloropropene | 6 | :U |
| 75-25-2----- | Bromoform | 6 | :U |
| 108-10-1----- | 4-Methyl-2-Pentanone | 11 | :U |
| 591-78-6----- | 2-Hexanone | 11 | :U |
| 127-18-4----- | Tetrachloroethene | 6 | :U |
| 79-34-5----- | 1,1,2,2-Tetrachloroethane | 6 | :U |
| 108-88-3----- | Toluene | 6 | :U |
| 108-90-7----- | Chlorobenzene | 6 | :U |
| 100-41-4----- | Ethylbenzene | 6 | :U |
| 100-42-5----- | Styrene | 6 | :U |
| 1330-20-7----- | Xylene (total) | 6 | :U |

000253

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: G S E L I

Contract: 68-D9-0038

EEB65

Lab Code: GULF

Case No.: 12095

SAS No.: _____

SDG.No.: EEB45

Matrix: (soil/water) SOIL

Lab Sample ID: CHN28

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: VOCHN28

Level: (low/med) LOW

Date Received: 06/10/89

% Moisture: not dec. 11

Date Analyzed: 06/15/89

Column (pack/cap) PACK

Dilution Factor: 1.0

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------------|-------|------------|----|
| 1. | AIR (ARTIFACT) | 7.82 | 21 | BJ |
| 2. | UNKNOWN HYDROCARBON | 22.75 | 14 | J |

000238

B-4 19-20½

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: G S E L IContract: 68-D9-0038EEB65Lab Code: GULFCase No.: 12095

SAS No.: _____

SDG No.: EEB45Matrix: (soil/water) SOILLab Sample ID: CHN28Sample wt/vol: 5.0 (g/mL) GLab File ID: VOCHN28Level: (low/med) LOWDate Received: 06/10/89% Moisture: not dec. 11Date Analyzed: 06/15/89Column: (pack/cap) PACKDilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/KG Q

| | | | |
|-----------------|----------------------------|----|-----|
| 74-87-3----- | Chloromethane | 11 | U |
| 74-83-9----- | Bromomethane | 11 | U |
| 75-01-4----- | Vinyl Chloride | 11 | U |
| 75-00-3----- | Chloroethane | 11 | U |
| 75-09-2----- | Methylene Chloride | 44 | I8 |
| 67-64-1----- | Acetone | 9 | IBJ |
| 75-15-0----- | Carbon Disulfide | 6 | U |
| 75-35-4----- | 1,1-Dichloroethene | 6 | U |
| 75-34-3----- | 1,1-Dichloroethane | 6 | U |
| 540-59-0----- | 1,2-Dichloroethene (total) | 6 | U |
| 67-66-3----- | Chloroform | 6 | U |
| 107-06-2----- | 1,2-Dichloroethane | 6 | U |
| 78-93-3----- | 2-Butanone | 11 | U |
| 71-55-6----- | 1,1,1-Trichloroethane | 6 | U |
| 56-23-5----- | Carbon Tetrachloride | 6 | U |
| 108-05-4----- | Vinyl Acetate | 11 | U |
| 75-27-4----- | Bromodichloromethane | 6 | U |
| 78-87-5----- | 1,2-Dichloropropane | 6 | U |
| 10061-01-5----- | cis-1,3-Dichloropropene | 6 | U |
| 79-01-6----- | Trichloroethene | 6 | U |
| 124-48-1----- | Dibromochloromethane | 6 | U |
| 79-00-5----- | 1,1,2-Trichloroethane | 6 | U |
| 71-43-2----- | Benzene | 6 | U |
| 10061-02-6----- | Trans-1,3-Dichloropropene | 6 | U |
| 75-25-2----- | Bromoform | 6 | U |
| 108-10-1----- | 4-Methyl-2-Pentanone | 11 | U |
| 591-78-6----- | 2-Hexanone | 11 | U |
| 127-18-4----- | Tetrachloroethene | 6 | U |
| 79-34-5----- | 1,1,2,2-Tetrachloroethane | 6 | U |
| 108-88-3----- | Toluene | 6 | U |
| 108-90-7----- | Chlorobenzene | 6 | U |
| 100-41-4----- | Ethylbenzene | 6 | U |
| 100-42-5----- | Styrene | 6 | U |
| 1330-20-7----- | Xylene (total) | 6 | U |

000237

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: G S E L I Contract: 68-D9-0038

EEB64

Lab Code: GULF Case No.: 12095 SAS No.: SDG No.: EEB45

Matrix: (soil/water) SOIL Lab Sample ID: CHN25

Sample wt/vol: 5.0 (g/mL) G Lab File ID: VOCHN25

Level: (low/med) LOW Date Received: 06/10/89

% Moisture: not dec. 12 Date Analyzed: 06/16/89

Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 2 (ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------------|-------|------------|----|
| 1. | AIR (ARTIFACT) | 6.80 | 6.4 | BJ |
| 2. | UNKNOWN HYDROCARBON | 22.84 | 18 | BJ |

B-4 16 1/2-18

EPA SAMPLE NO.

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: G S E L IContract: 68-D9-0038

EEB64

Lab Code: GULFCase No.: 12095

SAS No.: _____

SDG No.: EEB45Matrix: (soil/water) SOILLab Sample ID: CHN25Sample wt/vol: 5.0 (g/mL) GLab File ID: VOCHN25Level: (low/med) LOWDate Received: 06/10/89% Moisture: not dec. 12Date Analyzed: 06/16/89Column: (pack/cap) PACKDilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/KG Q

| | | | |
|-----------------|----------------------------|----|----|
| 74-87-3----- | Chloromethane | 11 | :U |
| 74-83-9----- | Bromomethane | 11 | :U |
| 75-01-4----- | Vinyl Chloride | 11 | :U |
| 75-00-3----- | Chloroethane | 11 | :U |
| 75-09-2----- | Methylene Chloride | 64 | :B |
| 67-64-1----- | Acetone | 16 | :B |
| 75-15-0----- | Carbon Disulfide | 6 | :U |
| 75-35-4----- | 1,1-Dichloroethene | 6 | :U |
| 75-34-3----- | 1,1-Dichloroethane | 6 | :U |
| 540-59-0----- | 1,2-Dichloroethene (total) | 6 | :U |
| 67-66-3----- | Chloroform | 6 | :U |
| 107-06-2----- | 1,2-Dichloroethane | 6 | :U |
| 78-93-3----- | 2-Butanone | 11 | :U |
| 71-55-6----- | 1,1,1-Trichloroethane | 6 | :U |
| 56-23-5----- | Carbon Tetrachloride | 6 | :U |
| 108-05-4----- | Vinyl Acetate | 11 | :U |
| 75-27-4----- | Bromodichloromethane | 6 | :U |
| 78-87-5----- | 1,2-Dichloropropane | 6 | :U |
| 10061-01-5----- | cis-1,3-Dichloropropene | 6 | :U |
| 79-01-6----- | Trichloroethene | 6 | :U |
| 124-48-1----- | Dibromochloromethane | 6 | :U |
| 79-00-5----- | 1,1,2-Trichloroethane | 6 | :U |
| 71-43-2----- | Benzene | 6 | :U |
| 10061-02-6----- | Trans-1,3-Dichloropropene | 6 | :U |
| 75-25-2----- | Bromoform | 6 | :U |
| 108-10-1----- | 4-Methyl-2-Pentanone | 11 | :U |
| 591-78-6----- | 2-Hexanone | 11 | :U |
| 127-18-4----- | Tetrachloroethene | 6 | :U |
| 79-34-5----- | 1,1,2,2-Tetrachloroethane | 6 | :U |
| 108-08-3----- | Toluene | 6 | :U |
| 108-90-7----- | Chlorobenzene | 6 | :U |
| 100-41-4----- | Ethylbenzene | 6 | :U |
| 100-42-5----- | Styrene | 6 | :U |
| 1330-20-7----- | Xylene (total) | 6 | :U |

1E

EFA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: G S E L IContract: 68-D9-0038EEB63Lab Code: GULF Case No.: 12095 SAS No.: SDG No.: EEB45Matrix: (soil/water) SOILLab Sample ID: CHN23Sample wt/vol: 5.0 (g/mL) GLab File ID: VOCHN23Level: (low/med) LOWDate Received: 06/10/89% Moisture: not dec. 13Date Analyzed: 06/15/89Column (pack/cap) PACKDilution Factor: 1.0Number TICs found: 2

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------------|-------|------------|----|
| 1. | AIR ARTIFACT | 7.85 | 22 | BJ |
| 2. | UNKNOWN HYDROCARBON | 22.75 | 14 | J |

000208

B-4 14-15½

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EEB63

Name: G S E L I Contract: 68-D9-003BCode: GULF Case No.: 12095 SAS No.: SDG No.: EEB45Matrix: (soil/water) SOIL Lab Sample ID: CHN23Sample wt/vol: 5.0 (g/mL) G Lab File ID: V0CHN23Condition: (low/med) LOW Date Received: 06/10/89Moisture: not dec. 13 Date Analyzed: 06/15/89Container: (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

Q

| CAS NO. | COMPOUND | 11 | U |
|-----------------|----------------------------|-----|---|
| 74-87-3----- | Chloromethane | 11 | U |
| 74-83-9----- | Bromomethane | 11 | U |
| 75-01-4----- | Vinyl Chloride | 11 | U |
| 75-00-8----- | Chloroethane | 11 | U |
| 75-09-2----- | Methylene Chloride | 44 | B |
| 67-64-1----- | Acetone | 130 | B |
| 75-15-0----- | Carbon Disulfide | 6 | U |
| 75-35-4----- | 1,1-Dichloroethene | 6 | U |
| 75-34-3----- | 1,1-Dichloroethane | 6 | U |
| 540-59-0----- | 1,2-Dichloroethene (total) | 6 | U |
| 67-66-3----- | Chloroform | 6 | U |
| 107-06-2----- | 1,2-Dichloroethane | 6 | U |
| 78-93-3----- | 2-Butanone | 11 | U |
| 71-55-6----- | 1,1,1-Trichloroethane | 6 | U |
| 56-23-5----- | Carbon Tetrachloride | 6 | U |
| 108-05-4----- | Vinyl Acetate | 11 | U |
| 75-27-4----- | Bromodichloromethane | 6 | U |
| 78-87-5----- | 1,2-Dichloropropane | 6 | U |
| 10061-01-5----- | cis-1,3-Dichloropropene | 6 | U |
| 79-01-6----- | Trichloroethene | 6 | U |
| 124-48-1----- | Dibromochloromethane | 6 | U |
| 79-00-5----- | 1,1,2-Trichloroethane | 6 | U |
| 71-43-2----- | Benzene | 6 | U |
| 10061-02-6----- | Trans-1,3-Dichloropropene | 6 | U |
| 75-25-2----- | Bromoform | 6 | U |
| 108-10-1----- | 4-Methyl-2-Pentanone | 11 | U |
| 591-78-6----- | 2-Hexanone | 11 | U |
| 127-18-4----- | Tetrachloroethene | 6 | U |
| 79-34-5----- | 1,1,2,2-Tetrachloroethane | 6 | U |
| 108-88-3----- | Toluene | 6 | U |
| 108-90-7----- | Chlorobenzene | 6 | U |
| 100-41-4----- | Ethylbenzene | 6 | U |
| 90-42-5----- | Styrene | 6 | U |
| 1330-20-7----- | Xylene (total) | 6 | U |

000207

1/87 Rev.

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EEB61

Lab Name: G S E L I

Contract: 68-D9-0038

Lab Code: GULF Case No.: 12095 SAS No.: SDG No.: EEB45

Matrix: (soil/water) SOIL

Lab Sample ID: CHN21

Sample wt/vol: 4.8 (g/mL) G

Lab File ID: VOCHN21

Level: (low/med) LOW

Date Received: 06/10/89

% Moisture: not dec. 8

Date Analyzed: 06/15/89

Column (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 2

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------------|-------|------------|----|
| 1. | AIR (ARTIFACT) | 7.90 | 25 | BJ |
| 2. | UNKNOWN HYDROCARBON | 22.75 | 16 | BJ |

000192

B-4 9-10^{1/2}

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: G S E L IContract: 68-D9-0038EEB61Lab Code: GULF Case No.: 12095 SAS No.: SDG No.: EEB45Matrix: (soil/water) SOILLab Sample ID: CHN21Sample wt/vol: 4.8 (g/mL) GLab File ID: VOCHN21Level: (low/med) LOWDate Received: 06/10/89% Moisture: not dec. 8Date Analyzed: 06/15/89Column: (pack/cap) PACKDilution Factor: 1.00

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KGQ.

| | | |
|-------------------------------------------------|-----------|----------|
| <u>74-87-3-----Chloromethane</u> | <u>11</u> | <u>U</u> |
| <u>74-83-9-----Bromomethane</u> | <u>11</u> | <u>U</u> |
| <u>75-01-4-----Vinyl Chloride</u> | <u>11</u> | <u>U</u> |
| <u>75-00-3-----Chloroethane</u> | <u>11</u> | <u>U</u> |
| <u>75-09-2-----Methylene Chloride</u> | <u>47</u> | <u>B</u> |
| <u>67-64-1-----Acetone</u> | <u>12</u> | <u>B</u> |
| <u>75-15-0-----Carbon Disulfide</u> | <u>6</u> | <u>U</u> |
| <u>75-35-4-----1,1-Dichloroethene</u> | <u>6</u> | <u>U</u> |
| <u>75-34-3-----1,1-Dichloroethane</u> | <u>6</u> | <u>U</u> |
| <u>540-59-0-----1,2-Dichloroethene (total)</u> | <u>6</u> | <u>U</u> |
| <u>67-66-3-----Chloroform</u> | <u>6</u> | <u>U</u> |
| <u>107-06-2-----1,2-Dichloroethane</u> | <u>6</u> | <u>U</u> |
| <u>78-93-3-----2-Butanone</u> | <u>11</u> | <u>U</u> |
| <u>71-55-6-----1,1,1-Trichloroethane</u> | <u>6</u> | <u>U</u> |
| <u>56-23-5-----Carbon Tetrachloride</u> | <u>6</u> | <u>U</u> |
| <u>108-05-4-----Vinyl Acetate</u> | <u>11</u> | <u>U</u> |
| <u>75-27-4-----Bromodichloromethane</u> | <u>6</u> | <u>U</u> |
| <u>78-87-5-----1,2-Dichloropropane</u> | <u>6</u> | <u>U</u> |
| <u>10061-01-5-----cis-1,3-Dichloropropene</u> | <u>6</u> | <u>U</u> |
| <u>79-01-6-----Trichloroethene</u> | <u>6</u> | <u>U</u> |
| <u>124-48-1-----Dibromochloromethane</u> | <u>6</u> | <u>U</u> |
| <u>79-00-5-----1,1,2-Trichloroethane</u> | <u>6</u> | <u>U</u> |
| <u>71-43-2-----Benzene</u> | <u>6</u> | <u>U</u> |
| <u>10061-02-6-----Trans-1,3-Dichloropropene</u> | <u>6</u> | <u>U</u> |
| <u>75-25-2-----Bromoform</u> | <u>6</u> | <u>U</u> |
| <u>108-10-1-----4-Methyl-2-Pentanone</u> | <u>11</u> | <u>U</u> |
| <u>591-78-6-----2-Hexanone</u> | <u>11</u> | <u>U</u> |
| <u>127-18-4-----Tetrachloroethene</u> | <u>6</u> | <u>U</u> |
| <u>79-34-5-----1,1,2,2-Tetrachloroethane</u> | <u>6</u> | <u>U</u> |
| <u>108-68-3-----Toluene</u> | <u>6</u> | <u>U</u> |
| <u>108-90-7-----Chlorobenzene</u> | <u>6</u> | <u>U</u> |
| <u>100-41-4-----Ethylbenzene</u> | <u>6</u> | <u>U</u> |
| <u>100-42-5-----Styrene</u> | <u>6</u> | <u>U</u> |
| <u>1330-20-7-----Xylene (total)</u> | <u>6</u> | <u>U</u> |

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EEB60

Lab Name: G S E L I

Contract: 68-D9-0038

Lab Code: GULF Case No.: 12095 SAS No.: _____ SDG-No.: EEB45

Matrix: (soil/water) SOIL

Lab Sample ID: CHN19

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: VOCHN19

Level: (low/med) LOW

Date Received: 06/10/89

% Moisture: not dec. 7

Date Analyzed: 06/15/89

Column (pack/cap) PACK

Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 2

(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------------|-------|------------|----|
| 1. | AIR ARTIFACT | 7.98 | 18 | BJ |
| 2. | UNKNOWN HYDROCARBON | 22.75 | 14 | J |

000177

B-3 19-20¹₂

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: G S E L IContract: 68-D9-0038EEB60Lab Code: GULFCase No.: 12095

SAS No.: _____

SDG No.: EEE45Matrix: (soil/water) SOILLab Sample ID: CHN19Sample wt/vol: 5.0 (g/mL) GLab File ID: VOCHN19Level: (low/med) LOWDate Received: 06/10/89% Moisture: not dec. 7Date Analyzed: 06/15/89Column: (pack/cap) PACKDilution Factor: 1.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) <u>UG/KG</u> | Q |
|------------|----------------------------|------------------------------------------------------|---|
| 74-87-3 | Chloromethane | 11 | U |
| 74-83-9 | Bromomethane | 11 | U |
| 75-01-4 | Vinyl Chloride | 11 | U |
| 75-00-3 | Chloroethane | 11 | U |
| 75-09-2 | Methylene Chloride | 38 | B |
| 67-64-1 | Acetone | 31 | B |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 5 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 11 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 11 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 5 | U |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 11 | U |
| 591-78-6 | 2-Hexanone | 11 | U |
| 127-18-4 | Tetrachloroethene | 5 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylene (total) | 5 | U |

000176

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: G S E L I

Contract: 68-D9-0038

EEB58

Lab Code: GULF Case No.: 12095 SAS No.: _____ SDG No.: EEB45

Matrix: (soil/water) SOIL Lab Sample ID: CHN17

Sample wt/vol: 5.0 (g/mL) G Lab File ID: VOCHN17

Level: (low/med) LOW Date Received: 06/10/89

% Moisture: not dec. 7 Date Analyzed: 06/16/89

Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 2 (ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------------|-------|------------|----|
| 1. | AIR (ARTIFACT) | 6.72 | 7.2 | BJ |
| 2. | UNKNOWN HYDROCARBON | 22.80 | 11 | BJ |

B-3 14-15½

EPA SAMPLE NO.

1A
VOLATILE ORGANICS ANALYSIS DATA SHEETLab Name: G S E L IContract: 68-D9-0038

EEB58

Lab Code: GULFCase No.: 12095

SAS No.: _____

SDG No.: EEB45Matrix: (soil/water) SOILLab Sample ID: CHN17Sample wt/vol: 5.0 (g/mL) GLab File ID: VOCHN17Level: (low/med) LOWDate Received: 06/10/89% Moisture: not dec. 7Date Analyzed: 06/16/89Column: (pack/cap) PACKDilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) ug/kg Q

| | | | |
|-----------------|----------------------------|----|----|
| 74-87-3----- | Chloromethane | 11 | :U |
| 74-83-9----- | Bromomethane | 11 | :U |
| 75-01-4----- | Vinyl Chloride | 11 | :U |
| 75-00-3----- | Chloroethane | 11 | :U |
| 75-09-2----- | Methylene Chloride | 44 | :B |
| 67-64-1----- | Acetone | 27 | :B |
| 75-15-0----- | Carbon Disulfide | 5 | :U |
| 75-35-4----- | 1,1-Dichloroethene | 5 | :U |
| 75-34-3----- | 1,1-Dichloroethane | 5 | :U |
| 540-59-0----- | 1,2-Dichloroethene (total) | 5 | :U |
| 67-66-3----- | Chloroform | 5 | :U |
| 107-06-2----- | 1,2-Dichloroethane | 5 | :U |
| 78-93-3----- | 2-Butanone | 11 | :U |
| 71-55-6----- | 1,1,1-Trichloroethane | 5 | :U |
| 56-23-5----- | Carbon Tetrachloride | 5 | :U |
| 108-05-4----- | Vinyl Acetate | 11 | :U |
| 75-27-4----- | Bromodichloromethane | 5 | :U |
| 78-87-5----- | 1,2-Dichloropropane | 5 | :U |
| 10061-01-5----- | cis-1,3-Dichloropropene | 5 | :U |
| 79-01-6----- | Trichloroethene | 5 | :U |
| 124-48-1----- | Dibromochloromethane | 5 | :U |
| 79-00-5----- | 1,1,2-Trichloroethane | 5 | :U |
| 71-43-2----- | Benzene | 5 | :U |
| 10061-02-6----- | Trans-1,3-Dichloropropene | 5 | :U |
| 75-25-2----- | Bromoform | 5 | :U |
| 108-10-1----- | 4-Methyl-2-Pentanone | 11 | :U |
| 591-78-6----- | 2-Hexanone | 11 | :U |
| 127-18-4----- | Tetrachloroethene | 5 | :U |
| 79-34-5----- | 1,1,2,2-Tetrachloroethane | 5 | :U |
| 108-88-3----- | Toluene | 5 | :U |
| 108-90-7----- | Chlorobenzene | 5 | :U |
| 100-41-4----- | Ethylbenzene | 5 | :U |
| 100-42-5----- | Styrene | 5 | :U |
| 1330-20-7----- | Xylene (total) | 5 | :U |

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: G S E L I

Contract: 68-D9-0038

EEB56

Lab Code: GULF Case No.: 12095 SAS No.: _____ SDG No.: EEB45

Matrix: (soil/water) SOIL

Lab Sample ID: CHN15

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: VOCHN15

Level: (low/med) LOW

Date Received: 06/10/89

% Moisture: not dec. 7

Date Analyzed: 06/16/89

Column (pack/cap) PACK

Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 2

(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------------|-------|------------|----|
| 1. | AIR (ARTIFACT) | 6.83 | 6.4 | BJ |
| 2. | UNKNOWN HYDROCARBON | 22.84 | 11 | BJ |

000148

B-3 9-10½

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: G S E L IContract: 68-D9-0038

EEB56

Lab Code: GULF Case No.: 12095 SAS No.: _____ SDG No.: EEB45Matrix: (soil/water) SOILLab Sample ID: CHN15Sample wt/vol: 5.0 (g/mL) GLab File ID: VOCHN15Level: (low/med) LOWDate Received: 06/10/89% Moisture: not dec. 7Date Analyzed: 06/15/89Column: (pack/cap) PACKDilution Factor: 1.0

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/KG Q

| | | | |
|-----------------|----------------------------|----|-----|
| 74-87-3----- | Chloromethane | 11 | U |
| 74-83-9----- | Bromomethane | 11 | U |
| 75-01-4----- | Vinyl Chloride | 11 | U |
| 75-00-3----- | Chloroethane | 11 | U |
| 75-09-2----- | Methylene Chloride | 49 | IB |
| 67-64-1----- | Acetone | 7 | IBJ |
| 75-15-0----- | Carbon Disulfide | 5 | U |
| 75-35-4----- | 1,1-Dichloroethene | 5 | U |
| 75-34-3----- | 1,1-Dichloroethane | 5 | U |
| 540-59-0----- | 1,2-Dichloroethene (total) | 5 | U |
| 67-66-3----- | Chloroform | 5 | U |
| 107-06-2----- | 1,2-Dichloroethane | 5 | U |
| 76-93-3----- | 2-Butanone | 11 | U |
| 71-55-6----- | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5----- | Carbon Tetrachloride | 5 | U |
| 108-05-4----- | Vinyl Acetate | 11 | U |
| 75-27-4----- | Bromodichloromethane | 5 | U |
| 78-87-5----- | 1,2-Dichloropropane | 5 | U |
| 10061-01-5----- | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6----- | Trichloroethene | 5 | U |
| 124-48-1----- | Dibromochloromethane | 5 | U |
| 79-00-5----- | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2----- | Benzene | 5 | U |
| 10061-02-6----- | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2----- | Bromoform | 5 | U |
| 108-10-1----- | 4-Methyl-2-Pentanone | 11 | U |
| 591-78-6----- | 2-Hexanone | 11 | U |
| 127-18-4----- | Tetrachloroethene | 5 | U |
| 79-34-5----- | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3----- | Toluene | 5 | U |
| 108-90-7----- | Chlorobenzene | 5 | U |
| 100-41-4----- | Ethylbenzene | 5 | U |
| 100-42-5----- | Styrene | 5 | U |
| 1330-20-7----- | Xylene (total) | 5 | U |

000147

1/87 Rev.

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: G S E L I

Contract: 68-D9-0038

EEB55

Lab Code: GULF Case No.: 12095 SAS No.: _____ SDG No.: EEB45

Matrix: (soil/water) SOIL Lab Sample ID: CHN13

Sample wt/vol: 5.0 (g/mL) G Lab File ID: VOCHN13

Level: (low/med) LOW Date Received: 06/10/89

% Moisture: not dec. 5 Date Analyzed: 06/16/89

Column (pack/cap) PACK Dilution Factor: 1.0

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------------|-------|------------|----|
| 1. | AIR (ARTIFACT) | 6.72 | 6.5 | BJ |
| 2. | UNKNOWN HYDROCARBON | 22.84 | 14 | BJ |

B-3 6/2-8

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: G S E L I

Contract: 68-D9-0038

EEB55

Lab Code: GULF Case No.: 12095 SAS No.: SDG No.: EEB45

Matrix: (soil/water) SOIL

Lab Sample ID: CHN13

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: VOCHN13

Level: (low/med) LOW

Date Received: 06/10/89

% Moisture: not dec. 5

Date Analyzed: 06/16/89

Column: (pack/cap) PACK

Dilution Factor: 1.0

CONCENTRATION UNITS:

(ug/L or ug/Kg) ug/kg

Q

| | | |
|------------------------------------------|----|----|
| 74-87-3-----Chloromethane | 11 | U |
| 74-83-9-----Bromomethane | 11 | U |
| 75-01-4-----Vinyl Chloride | 11 | U |
| 75-00-3-----Chloroethane | 11 | U |
| 75-09-2-----Methylene Chloride | 43 | B |
| 67-64-1-----Acetone | 9 | BJ |
| 75-15-0-----Carbon Disulfide | 5 | U |
| 75-35-4-----1,1-Dichloroethene | 5 | U |
| 75-34-3-----1,1-Dichloroethane | 5 | U |
| 540-59-0-----1,2-Dichloroethene (total) | 5 | U |
| 67-66-3-----Chloroform | 5 | U |
| 107-06-2-----1,2-Dichloroethane | 5 | U |
| 78-93-3-----2-Butanone | 11 | U |
| 71-55-6-----1,1,1-Trichloroethane | 5 | U |
| 56-23-5-----Carbon Tetrachloride | 5 | U |
| 108-05-4-----Vinyl Acetate | 11 | U |
| 75-27-4-----Bromodichloromethane | 5 | U |
| 78-87-5-----1,2-Dichloropropane | 5 | U |
| 10061-01-5-----cis-1,3-Dichloropropene | 5 | U |
| 79-01-6-----Trichloroethene | 5 | U |
| 124-48-1-----Dibromochloromethane | 5 | U |
| 79-00-5-----1,1,2-Trichloroethane | 5 | U |
| 71-43-2-----Benzene | 5 | U |
| 10061-02-6-----Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2-----Bromoform | 5 | U |
| 108-10-1-----4-Methyl-2-Pentanone | 11 | U |
| 591-78-6-----2-Hexanone | 11 | U |
| 127-18-4-----Tetrachloroethene | 5 | U |
| 79-34-5-----1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3-----Toluene | 5 | U |
| 108-90-7-----Chlorobenzene | 5 | U |
| 100-41-4-----Ethylbenzene | 5 | U |
| 100-42-5-----Styrene | 5 | U |
| 1330-20-7-----Xylene (total) | 5 | U |

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: G S E L I Contract: 68-D9-0038

EEB53

Lab Code: GULF Case No.: 12095 SAS No.: SDG No.: EEB45

Matrix: (soil/water) SOIL Lab Sample ID: CHN11

Sample wt/vol: 4.7 (g/mL) G Lab File ID: VOCHN11

Level: (low/med) LOW Date Received: 06/10/89

% Moisture: not dec. 5 Date Analyzed: 06/15/89

Column (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 2 (ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------------|-------|------------|----|
| 1. | UNKNOWN HYDROCARBON | 22.75 | 16 | BJ |
| 2. | AIR (ARTIFACT) | 6.47 | 6.8 | BJ |

000116

B-3 1/2-3

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: G S E L IContract: 68-D9-0038EEB53Lab Code: GULF Case No.: 12095 SAS No.: SDG No.: EEB45Matrix: (soil/water) SOILLab Sample ID: CHN11Sample wt/vol: 4.7 (g/mL) GLab File ID: VOCHN11Level: (low/med) LOWDate Received: 06/10/89% Moisture: not dec. 5Date Analyzed: 06/15/89Column: (pack/cap) PACKDilution Factor: 1.00

CONCENTRATION UNITS:

CAS NO. COMPOUND (ug/L or ug/Kg) UG/KG Q

| | | | |
|-----------------|----------------------------|----|-----|
| 74-87-3----- | Chloromethane | 11 | U |
| 74-83-9----- | Bromomethane | 11 | U |
| 75-01-4----- | Vinyl Chloride | 11 | U |
| 75-00-3----- | Chloroethane | 11 | U |
| 75-09-2----- | Methylene Chloride | 30 | IB |
| 67-64-1----- | Acetone | 8 | IBJ |
| 75-15-0----- | Carbon Disulfide | 6 | U |
| 75-35-4----- | 1,1-Dichloroethene | 6 | U |
| 75-34-3----- | 1,1-Dichloroethane | 6 | U |
| 540-59-0----- | 1,2-Dichloroethene (total) | 6 | U |
| 67-66-3----- | Chloroform | 6 | U |
| 107-06-2----- | 1,2-Dichloroethane | 6 | U |
| 78-93-3----- | 2-Butanone | 11 | U |
| 71-55-6----- | 1,1,1-Trichloroethane | 6 | U |
| 56-23-5----- | Carbon Tetrachloride | 6 | U |
| 108-05-4----- | Vinyl Acetate | 11 | U |
| 75-27-4----- | Bromodichloromethane | 6 | U |
| 78-87-5----- | 1,2-Dichloropropane | 6 | U |
| 10061-01-5----- | cis-1,3-Dichloropropene | 6 | U |
| 79-01-6----- | Trichloroethene | 6 | U |
| 124-48-1----- | Dibromochloromethane | 6 | U |
| 79-00-5----- | 1,1,2-Trichloroethane | 6 | U |
| 71-43-2----- | Benzene | 6 | U |
| 10061-02-6----- | Trans-1,3-Dichloropropene | 6 | U |
| 75-25-2----- | Bromoform | 6 | U |
| 108-10-1----- | 4-Methyl-2-Pentanone | 11 | U |
| 591-78-6----- | 2-Hexanone | 11 | U |
| 127-18-4----- | Tetrachloroethene | 6 | U |
| 79-34-5----- | 1,1,2,2-Tetrachloroethane | 6 | U |
| 108-88-3----- | Toluene | 6 | U |
| 108-90-7----- | Chlorobenzene | 6 | U |
| 100-41-4----- | Ethylbenzene | 6 | U |
| 100-42-5----- | Styrene | 6 | U |
| 1330-20-7----- | Xylene (total) | 6 | U |

000115

1E
 VOLATILE ORGANICS ANALYSIS DATA SHEET
 TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: G S E L I

Contract: 68-D9-0038

EEB51

Lab Code: GULF Case No.: 12095 SAS No.: _____ SDG No.: EEB45

Matrix: (soil/water) SOIL

Lab Sample ID: CHNO9

Sample wt/vol: 4.6 (g/mL) G

Lab File ID: VOCHNO9

Level: (low/med) LOW

Date Received: 06/10/89

% Moisture: not dec. 3

Date Analyzed: 06/14/89

Column (pack/cap) PACK

Dilution Factor: 1.0

Number TICs found: 3

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------------|-------|------------|----|
| 1. | AIR (ARTIFACT) | 6.97 | 6.5 | BJ |
| 2. | UNKNOWN HYDROCARBON | 22.85 | 2.9 | J |
| 3. | UNKNOWN | 22.30 | 3.1 | J |

000096



UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 5
CHICAGO, ILLINOIS

DATE: JUL 25 1989
SUBJECT: Review of Region 5 data for WC 1 - FREEZER
FROM: Curtis Ross, Director Chuck Elly for
Region 5 Central Regional Laboratory
To: Data User:

Attached are the results for: Soil Samples background Boring B-1
CRL Data Set Numbers: RCRA 6294 CASE 12095
Sample Numbers: 89KV01501-S05
Parameter(s): VOLATILES (5)
Laboratory: Gulf South Environmental Labs

Results Status:

- DATA ACCEPTABLE FOR USE* See Revision Comments
 DATA QUALIFIED AS TO USE
 DATA UNACCEPTABLE FOR USE

* For data acceptability requirements, refer to the method capability statement for the methods referenced.

Comments by the Quality Control Coordinator:

If there are any questions regarding the data, refer them to David Payne,
the Quality Control Coordinator, at 3-3805

Please sign and date this form below and return it with any comments to:

Sylvia Griffin
Data Management Coordinator
Region 5 Central Regional Laboratory
(5SCRL)

RECEIVED BY
S. Griffin
JUL 26 1989

RECEIVED BY/DATE:
Comments:

U.S. EPA CENTRAL
REGIONAL LAB

DATA QUALIFIERS

Contractor: Gulf South Environmental
Labs | Case 12095

Below is a summary of the out-of-control audits and the possible effect on the data for this case:

All are reasonable based on the method used for analysis.

I find the data contained within this package to be acceptable for use.

ddf 7-24-89

Reviewed by:

Diane Dennis-Flagler

Phone:

7-24-89



United States Environmental Protection Agency
Contract Laboratory Program Sample Element
PO Box 818 Alexandria, VA 22313
703-557-2490 FTS 557-2490

garage traffic Report
(For CLP Use Only)

Case Number AS No.

12095

| | | | | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|------------------------------------------|
| 1. Sample Description (Enter in Column A) | | 2. Region Number 5 | Sampling Co. MPCA | 4. Date Shipped 728592502 | 5. Date Received 6-6-89 | Received by Leslie Pedaichere |
| 1. Surface Water 2. Ground Water 3. Leachate 4. Rinsate 5. Soil/Sediment 6. Oil (SAS) 7. Waste (SAS) 8. Other (SAS) (Specify) | | Sampler (Name) Kevin Veach | | Carrier Airborn Express | | Laboratory Contract Number 68-01-0038 |
| | | 3. Ship To: Cindy Palazzo Gulf South Environmental Laboratories 6801 Press Dr, E. Bldg. New Orleans, LA 70126 | | Triple volume required for matrix spike/duplicate aqueous sample. Ship medium and high concentration samples in paint cans. | | Unit Price \$937.00 |
| | | | | See reverse for additional instructions. | | Date Received |
| | | | | | | Received by |
| | | | | | | Contract Number |
| | | | | | | Price |

| CLP Sample Number (From label(s)) | (A) Sample Descrip- tion (From box #) | (B) Concen- tration L=low M=med H=high | (C) RAS Analysis | | | (D) Special Handling | (E) Station Location | (F) Date/Time of Sample Collection | (G) Corresponding CLP Inorganic Sample Number | (H) Sample Condition on Receipt | (I) High Conc. Phases (Check below) | | |
|--------------------------------------------|------------------------------------------------------|-------------------------------------------------------|---------------------|-----|--------------|----------------------------|----------------------------|---------------------------------------------|-----------------------------------------------------------|------------------------------------------|-------------------------------------------|--------------------|---------------------------|
| | | | VOA | BNA | Pest/ PCB | | | | | | Sol- id | Wa- ter— MIS | Non Wa- ter— MIS |
| EEB 37 | 5 | L | X | | | | | | MEEZ 00 | SAMPLE RETAINED BY MPCA | | | |
| EEB 38 ✓ | 5 | L | X | | | B-1 4-5½' | | | MEEZ 01 | | | | |
| EEB 39 ✓ | 5 | L | X | | | B-1 6½-8' | | | MEEZ 02 | | | | |
| EEB 40 ✓ | 5 | L | X | | | B-1 9-10½' | | | MEEZ 03 | | | | |
| EEB 41 ✓ | 5 | L | X | | | | | | MEEZ 04 | SAMPLE RETAINED BY MPCA | | | |
| EEB 42 ✓ | 5 | L | X | | | B-1 14-15½' | | | MEEZ 05 | | | | |
| EEB 43 ✓ | 5 | L | X | | | | | | MEEZ 06 | SAMPLE RETAINED BY MPCA | | | |
| EEB 44 ✓ | 5 | L | X | | | B-1 19-20 | | | MEEZ 07 | | | | |
| | | | | | | | | | | PARAMETER: | YES | NO | |
| | | | | | | | | | | CE PRESENT? | ✓ | | |
| | | | | | | | | | | BOTTLES BROKEN? | ✓ | | |
| | | | | | | | | | | EPA TAG PRESENT? | ✓ | | |
| | | | | | | | | | | SHIPPING SEALS? | ✓ | | |
| | | | | | | | | | | CONTAINER SEALS? | ✓ | | |
| | | | | | | | | | | CUSTODY FORM OK? | ✓ | | |
| | | | | | | | | | | LABELS ACCURATE? | ✓ | | |
| | | | | | | | | | | NOTES COMMENTS (if none) | | | |
| 000001 | | | | | | | | | | SDG No. EEB 38 | | | |
| | | | | | | | | | | Final SDG No. EEB 44 | | | |

GULF SOUTH ENVIRONMENTAL LABORATORY

formerly GSRI

RECEIVED

JUN 20 1989

US EPA CENTRAL REGIONAL LAB.
536 S. CLARK ST.
CHICAGO, ILLINOIS 60605
Sample Data Package

EPA Contract No. 68-D9-0038

Project No. 6200-3026

Case 12095

Episode(s): CGX

Presented to:

U.S. Environmental Protection Agency
Sample Management Office
Contract Laboratory Program
209 Madison Street, Ste. 200
Alexandria, Virginia 22314

Present by:

Analytical Chemistry Department
Gulf South Environmental Laboratory, Inc.
P.O. Box 26518
New Orleans, Louisiana 70186

June 19, 1989

GULF SOUTH ENVIRONMENTAL LABORATORY

formerly GSRI

Narrative

Case 12095

Gulf South Environmental Laboratory
Case 12095

EPA Contract No. 68-D9-0038
SDG No. EEB38

Narrative

Case 12095 (SDG EEB38) consisted of five (5) soil samples which were received by Gulf South Environmental Laboratory on June 6, 1989 and logged in as Episode CGX. The samples were identified as follows:

EEB38 EEB39 EEB40 EEB42 EEB44

The samples were analyzed for volatile organics only. Twenty additional samples, received on June 6, 1989 are being reported as SDG EEB45.

No problems were encountered with the analyses.

"I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature."



Richard R. Whitney, Ph.D.
GC/MS Laboratory Manager

6/19/89

Date

000001

ANALYTICAL CHEMISTRY DEPARTMENT

PERSONNEL SIGNATURE RECORD

| <u>NAME</u> | <u>POSITION</u> | <u>DATE</u> | <u>SIGNATURE</u> | <u>INITIALS</u> |
|---------------------|--------------------------|-------------|---------------------|-----------------|
| James E. Henderson | Project Manager | 1/10/89 | James E. Henderson | JEH |
| Richard R. Whitney | GC/MS Lab Manager | 1/10/89 | Richard R. Whitney | RRW |
| Cindy Palazzo | Report Center Manager | 1/10/89 | Cindy Palazzo | CP |
| Maude Young | Administrative Assistant | 1/10/89 | Maude Young | MY |
| Keith Rhode | Inorganics Lab Manager | 1/10/89 | Keith Rhode | KJR |
| Mike Pearson | Prep Lab Manager | 1/10/89 | Mike Pearson | MPE |
| Al Jarquin | Mass Spec Operator | 1/10/89 | Al Jarquin | AJ |
| Marie Sears | Laboratory Technician | 1/10/89 | Marie Sears | MSE |
| Darryl Melcancon | Data Specialist | 1/10/89 | Darryl Melcancon | DFM |
| Hari Singh | Mass Spec Operator | 1/10/89 | Hari Singh | HJS |
| Homer Sheeler | Laboratory Technician | 1/10/89 | Homer Sheeler | HS |
| Sherry Phillips | Laboratory Technician | 1/10/89 | Sherry Phillips | SP |
| Shelley Antoine | Mass Spec Operator | 1/10/89 | Shelley Antoine | SA |
| Kevin Kern | Mass Spec Operator | 1/10/89 | Kevin Kern | KJ.K. |
| Joann McFall | Mass Spec Operator | 1/10/89 | Joann McFall | JM |
| Celia H. Mayuer | Data Specialist | 1/10/89 | Celia H. Mayuer | CJM |
| Timothy Morris | Laboratory Technician | 1/10/89 | Timothy Morris | TAM |
| Stephanie Fairchild | Laboratory Technician | 1/10/89 | Stephanie Fairchild | S.F. |
| Louis Nicosia | Laboratory Technician | 1/10/89 | Louis Nicosia | LN |
| Richard Prator | Laboratory Technician | 1/10/89 | Richard Prator | R.P. |

ANALYTICAL CHEMISTRY DEPARTMENT

PERSONNEL SIGNATURE RECORD

000003

B-1 4-5½'

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: G S E L I Contract: 68-D9-0038

EEB38

Lab Code: GULF Case No.: 12095 SAS No.: _____ SDG. No.: EEB38

Matrix: (soil/water) SOIL Lab Sample ID: CGX01

Sample wt/vol: 4.6 (g/mL) G Lab File ID: VOCGX01

Level: (low/med) LOW Date Received: 06/06/89

% Moisture: not dec. 7 Date Analyzed: 06/06/89

Column: (pack/cap) PACK Dilution Factor: 1.00

CONCENTRATION UNITS:

| CAS NO. | COMPOUND | (ug/L or ug/Kg) UG/KG | Q |
|---------|----------|-----------------------|---|
|---------|----------|-----------------------|---|

| | | | |
|-----------------|----------------------------|----|----|
| 74-87-3----- | Chloromethane | 12 | U |
| 74-83-9----- | Bromomethane | 12 | U |
| 75-01-4----- | Vinyl Chloride | 12 | U |
| 75-00-3----- | Chloroethane | 12 | U |
| 75-09-2----- | Methylene Chloride | 8 | B |
| 67-64-1----- | Acetone | 14 | B |
| 75-15-0----- | Carbon Disulfide | 6 | U |
| 75-35-4----- | 1,1-Dichloroethene | 6 | U |
| 75-34-3----- | 1,1-Dichloroethane | 6 | U |
| 540-59-0----- | 1,2-Dichloroethene (total) | 6 | U |
| 67-66-3----- | Chloroform | 6 | U |
| 107-06-2----- | 1,2-Dichloroethane | 6 | U |
| 78-93-3----- | 2-Butanone | 30 | 29 |
| 71-55-6----- | 1,1,1-Trichloroethane | 6 | U |
| 56-23-5----- | Carbon Tetrachloride | 6 | U |
| 108-05-4----- | Vinyl Acetate | 12 | U |
| 75-27-4----- | Bromodichloromethane | 6 | U |
| 78-87-5----- | 1,2-Dichloropropane | 6 | U |
| 10061-01-5----- | cis-1,3-Dichloropropene | 6 | U |
| 79-01-6----- | Trichloroethene | 6 | U |
| 124-48-1----- | Dibromochloromethane | 6 | U |
| 79-00-5----- | 1,1,2-Trichloroethane | 6 | U |
| 71-43-2----- | Benzene | 6 | U |
| 10061-02-6----- | Trans-1,3-Dichloropropene | 6 | U |
| 75-25-2----- | Bromoform | 6 | U |
| 108-10-1----- | 4-Methyl-2-Fantanone | 12 | U |
| 591-78-6----- | 2-Hexanone | 12 | U |
| 127-18-4----- | Tetrachloroethene | 6 | U |
| 79-34-5----- | 1,1,2,2-Tetrachloroethane | 6 | U |
| 108-88-3----- | Toluene | 6 | U |
| 108-90-7----- | Chlorobenzene | 6 | U |
| 100-41-4----- | Ethylbenzene | 6 | U |
| 100-42-5----- | Styrene | 6 | U |
| 1330-20-7----- | Xylene (total) | 6 | U |

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EEB38

Lab Name: G S E L I

Contract: 68-D9-0038

Lab Code: GULF Case No.: 12095

SAS No.: _____ SDG No.: EEB38

Matrix: (soil/water) SOIL

Lab Sample ID: CGX01

Sample wt/vol: 4.6 (g/mL) G

Lab File ID: VOCGX01

Level: (low/med) LOW

Date Received: 06/06/89

% Moisture: not dec. 7

Date Analyzed: 06/06/89

Column (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------------|-------|------------|----|
| 1. | AIR ARTIFACT | 8.07 | 11 | BJ |
| 2. | UNKNOWN HYDROCARBON | 22.77 | 6.3 | J |

B-1 6½-8

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: G S E L IContract: 68-D9-0038EEB39Lab Code: GULF Case No.: 12095

SAS No.: _____

SDG No.: EEB38Matrix: (soil/water) SOILLab Sample ID: CGX03Sample wt/vol: 4.9 (g/mL) GLab File ID: VOCGX03Level: (low/med) LOWDate Received: 06/06/89% Moisture: not dec. 9Date Analyzed: 06/06/89Column: (pack/cap) PACKDilution Factor: 1.00

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

Q

| CAS NO. | COMPOUND | Q |
|-----------------|----------------------------|------|
| 74-87-3----- | Chloromethane | 11 U |
| 74-83-9----- | Bromomethane | 11 U |
| 75-01-4----- | Vinyl Chloride | 11 U |
| 75-00-3----- | Chloroethane | 11 U |
| 75-09-2----- | Methylene Chloride | 11 B |
| 67-64-1----- | Acetone | 22 B |
| 75-15-0----- | Carbon Disulfide | 5 U |
| 75-35-4----- | 1,1-Dichloroethene | 5 U |
| 75-34-3----- | 1,1-Dichloroethane | 5 U |
| 540-59-0----- | 1,2-Dichloroethene (total) | 5 U |
| 67-66-3----- | Chloroform | 5 U |
| 107-06-2----- | 1,2-Dichloroethane | 5 U |
| 78-93-3----- | 2-Butanone | 32 B |
| 71-55-6----- | 1,1,1-Trichloroethane | 5 U |
| 56-23-5----- | Carbon Tetrachloride | 5 U |
| 108-05-4----- | Vinyl Acetate | 11 U |
| 75-27-4----- | Bromodichloromethane | 5 U |
| 78-87-5----- | 1,2-Dichloropropane | 5 U |
| 10061-01-5----- | cis-1,3-Dichloropropene | 5 U |
| 79-01-6----- | Trichloroethene | 5 U |
| 124-48-1----- | Dibromochloromethane | 5 U |
| 79-00-5----- | 1,1,2-Trichloroethane | 5 U |
| 71-43-2----- | Benzene | 5 U |
| 10061-02-6----- | Trans-1,3-Dichloropropene | 5 U |
| 75-25-2----- | Bromoform | 5 U |
| 108-10-1----- | 4-Methyl-2-Pentanone | 11 U |
| 591-78-6----- | 2-Hexanone | 11 U |
| 127-18-4----- | Tetrachloroethene | 5 U |
| 79-34-5----- | 1,1,2,2-Tetrachloroethane | 5 U |
| 108-88-3----- | Toluene | 5 U |
| 108-90-7----- | Chlorobenzene | 5 U |
| 100-41-4----- | Ethylbenzene | 5 U |
| 100-42-5----- | Styrene | 5 U |
| 1330-20-7----- | Xylene (total) | 5 U |

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EEB39

Lab Name: G S E L I

Contract: 68-D9-0038

Lab Code: GULF Case No.: 12095

SAS No.: _____ SDG No.: EEB38

Matrix: (soil/water) SOIL

Lab Sample ID: CGX03

Sample wt/vol: 4.9 (g/mL) G

Lab File ID: VOCGX03

Level: (low/med) LOW

Date Received: 06/06/89

% Moisture: not dec. 9

Date Analyzed: 06/06/89

Column (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 2

(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------------|-------|------------|----|
| 1. | AIR ARTIFACT | 8.03 | 9.4 | BJ |
| 2. | UNKNOWN HYDROCARBON | 22.77 | 7.5 | J |

B-1 9-10 1/2

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: G S E L IContract: 68-D9-0038EEB40Lab Code: GULF Case No.: 12095SAS No.: _____ SDG No.: EEB38Matrix: (soil/water) SOILLab Sample ID: CGX05Sample wt/vol: 4.5 (g/mL) GLab File ID: VOCGX05Level: (low/med) LOWDate Received: 06/06/89% Moisture: not dec. 14Date Analyzed: 06/06/89Column: (pack/cap) PACKDilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: | |
|---------|----------|----------------------|-------|
| | | (ug/L or ug/Kg) | UG/KG |

| | | | |
|-----------------|----------------------------|----|---|
| 74-87-3----- | Chloromethane | 13 | U |
| 74-83-9----- | Bromomethane | 13 | U |
| 75-01-4----- | Vinyl Chloride | 13 | U |
| 75-00-3----- | Chloroethane | 13 | U |
| 75-09-2----- | Methylene Chloride | 15 | B |
| 67-64-1----- | Acetone | 19 | B |
| 75-15-0----- | Carbon Disulfide | 6 | U |
| 75-35-4----- | 1,1-Dichloroethene | 6 | U |
| 75-34-3----- | 1,1-Dichloroethane | 6 | U |
| 540-59-0----- | 1,2-Dichloroethene (total) | 6 | U |
| 67-66-3----- | Chloroform | 6 | U |
| 107-06-2----- | 1,2-Dichloroethane | 6 | U |
| 78-93-3----- | 2-Butanone | 13 | U |
| 71-55-6----- | 1,1,1-Trichloroethane | 6 | U |
| 56-23-5----- | Carbon Tetrachloride | 6 | U |
| 108-05-4----- | Vinyl Acetate | 13 | U |
| 75-27-4----- | Bromodichloromethane | 6 | U |
| 78-87-5----- | 1,2-Dichloropropane | 6 | U |
| 10061-01-5----- | cis-1,3-Dichloropropene | 6 | U |
| 79-01-6----- | Trichloroethene | 6 | U |
| 124-48-1----- | Dibromochloromethane | 6 | U |
| 79-00-5----- | 1,1,2-Trichloroethane | 6 | U |
| 71-43-2----- | Benzene | 6 | U |
| 10061-02-6----- | Trans-1,3-Dichloropropene | 6 | U |
| 75-25-2----- | Bromoform | 6 | U |
| 108-10-1----- | 4-Methyl-2-Pentanone | 13 | U |
| 591-78-6----- | 2-Hexanone | 13 | U |
| 127-18-4----- | Tetrachloroethene | 6 | U |
| 79-34-5----- | 1,1,2,2-Tetrachloroethane | 6 | U |
| 108-88-3----- | Toluene | 6 | U |
| 108-90-7----- | Chlorobenzene | 6 | U |
| 100-41-4----- | Ethylbenzene | 6 | U |
| 100-42-5----- | Styrene | 6 | U |
| 1330-20-7----- | Xylene (total) | 6 | U |

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: G S E L I

Contract: 68-D9-0038

EEB40

Lab Code: GULF Case No.: 12095

SAS No.: _____ SDG No.: EEB38

Matrix: (soil/water) SOIL

Lab Sample ID: CGX05

Sample wt/vol: 4.5 (g/mL) G

Lab File ID: VOCGX05

Level: (low/med) LOW

Date Received: 06/06/89

% Moisture: not dec. 14

Date Analyzed: 06/06/89

Column (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 2

(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------------|-------|------------|---|
| 1. | AIR ARTIFACT | 8.15 | 9.0 | J |
| 2. | UNKNOWN HYDROCARBON | 22.77 | 11 | J |

B-1 14-15¹/₂

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name: G S E L IContract: 68-D9-0038

EEB42

Lab Code: GULF Case No.: 12095SAS No.: _____ SDG No.: EEB38Matrix: (soil/water) SOILLab Sample ID: CGX07Sample wt/vol: 4.9 (g/mL) GLab File ID: VOCGX07Level: (low/med) LOWDate Received: 06/06/89% Moisture: not dec. 14Date Analyzed: 06/07/89Column: (pack/cap) PACKDilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: | |
|-----------------|----------------------------|----------------------|-------|
| | | (ug/L or ug/Kg) | UG/KG |
| 74-87-3----- | Chloromethane | 12 | U |
| 74-83-9----- | Bromomethane | 12 | U |
| 75-01-4----- | Vinyl Chloride | 12 | U |
| 75-00-3----- | Chloroethane | 12 | U |
| 75-09-2----- | Methylene Chloride | 84 | B |
| 67-64-1----- | Acetone | 27 | B |
| 75-15-0----- | Carbon Disulfide | 6 | U |
| 75-35-4----- | 1,1-Dichloroethene | 6 | U |
| 75-34-3----- | 1,1-Dichloroethane | 6 | U |
| 540-59-0----- | 1,2-Dichloroethene (total) | 6 | U |
| 67-66-3----- | Chloroform | 6 | U |
| 107-06-2----- | 1,2-Dichloroethane | 6 | U |
| 78-93-3----- | 2-Butanone | 12 | U |
| 71-55-6----- | 1,1,1-Trichloroethane | 6 | U |
| 56-23-5----- | Carbon Tetrachloride | 6 | U |
| 108-05-4----- | Vinyl Acetate | 12 | U |
| 75-27-4----- | Bromodichloromethane | 6 | U |
| 78-87-5----- | 1,2-Dichloropropane | 6 | U |
| 10061-01-5----- | cis-1,3-Dichloropropene | 6 | U |
| 79-01-6----- | Trichloroethene | 6 | U |
| 124-48-1----- | Dibromochloromethane | 6 | U |
| 79-00-5----- | 1,1,2-Trichloroethane | 6 | U |
| 71-43-2----- | Benzene | 6 | U |
| 10061-02-6----- | Trans-1,3-Dichloropropene | 6 | U |
| 75-25-2----- | Bromoform | 6 | U |
| 108-10-1----- | 4-Methyl-2-Pentanone | 12 | U |
| 591-78-6----- | 2-Hexanone | 12 | U |
| 127-18-4----- | Tetrachloroethene | 6 | U |
| 79-34-5----- | 1,1,2,2-Tetrachloroethane | 6 | U |
| 108-88-3----- | Toluene | 6 | U |
| 108-90-7----- | Chlorobenzene | 6 | U |
| 100-41-4----- | Ethylbenzene | 6 | U |
| 100-42-5----- | Styrene | 6 | U |
| 1330-20-7----- | Xylene (total) | 6 | U |

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: G S E L IContract: 68-D9-0038EEB42Lab Code: GULF Case No.: 12095 SAS No.: _____ SDG No.: EEB38Matrix: (soil/water) SOILLab Sample ID: CGX07Sample wt/vol: 4.9 (g/mL) GLab File ID: VOCGX07Level: (low/med) LOWDate Received: 06/06/89% Moisture: not dec. 14Date Analyzed: 06/07/89Column (pack/cap) PACKDilution Factor: 1.00Number TICs found: 3

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------------|-------|------------|---|
| 1. | AIR ARTIFACT | 8.07 | 9.6 | J |
| 2. | UNKNOWN HYDROCARBON | 18.59 | 7.3 | J |
| 3. | UNKNOWN HYDROCARBON | 22.77 | 10 | J |

B-1 19-20

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EEB44

Lab Name: G S E L I

Contract: 68-D9-0038

Lab Code: GULF Case No.: 12095

SAS No.: _____

SDG No.: EEB38

Matrix: (soil/water) SOIL

Lab Sample ID: CGX09

Sample wt/vol: 4.9 (g/mL) G

Lab File ID: VOCGX09

Level: (low/med) LOW

Date Received: 06/06/89

% Moisture: not dec. 13

Date Analyzed: 06/07/89

Column: (pack/cap) PACK

Dilution Factor: 1.00

CONCENTRATION UNITS:

(ug/L or ug/Kg) UG/KG

Q

| | | |
|------------------------------------------|----|---|
| 74-87-3-----Chloromethane | 12 | U |
| 74-83-9-----Bromomethane | 12 | U |
| 75-01-4-----Vinyl Chloride | 12 | U |
| 75-00-3-----Chloroethane | 12 | U |
| 75-09-2-----Methylene Chloride | 85 | B |
| 67-64-1-----Acetone | 54 | B |
| 75-15-0-----Carbon Disulfide | 6 | U |
| 75-35-4-----1,1-Dichloroethene | 6 | U |
| 75-34-3-----1,1-Dichloroethane | 6 | U |
| 540-59-0-----1,2-Dichloroethene (total) | 6 | U |
| 67-66-3-----Chloroform | 6 | U |
| 107-06-2-----1,2-Dichloroethane | 6 | U |
| 78-93-3-----2-Butanone | 12 | U |
| 71-55-6-----1,1,1-Trichloroethane | 6 | U |
| 56-23-5-----Carbon Tetrachloride | 6 | U |
| 108-05-4-----Vinyl Acetate | 12 | U |
| 75-27-4-----Bromodichloromethane | 6 | U |
| 78-87-5-----1,2-Dichloropropane | 6 | U |
| 10061-01-5-----cis-1,3-Dichloropropene | 6 | U |
| 79-01-6-----Trichloroethene | 6 | U |
| 124-48-1-----Dibromochloromethane | 6 | U |
| 79-00-5-----1,1,2-Trichloroethane | 6 | U |
| 71-43-2-----Benzene | 6 | U |
| 10061-02-6-----Trans-1,3-Dichloropropene | 6 | U |
| 75-25-2-----Bromoform | 6 | U |
| 108-10-1-----4-Methyl-2-Pentanone | 12 | U |
| 591-78-6-----2-Hexanone | 12 | U |
| 127-18-4-----Tetrachloroethene | 6 | U |
| 79-34-5-----1,1,2,2-Tetrachloroethane | 6 | U |
| 108-88-3-----Toluene | 6 | U |
| 108-90-7-----Chlorobenzene | 6 | U |
| 100-41-4-----Ethylbenzene | 6 | U |
| 100-42-5-----Styrene | 6 | U |
| 1330-20-7-----Xylene (total) | 6 | U |

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name: G S E L I

Contract: 68-D9-0038

EEB44

Lab Code: GULF

Case No.: 12095

SAS No.: _____

SDG No.: EEB38

Matrix: (soil/water) SOIL

Lab Sample ID: CGX09

Sample wt/vol: 4.9 (g/mL) G

Lab File ID: VOCGX09

Level: (low/med) LOW

Date Received: 06/06/89

% Moisture: not dec. 13

Date Analyzed: 06/07/89

Column (pack/cap) PACK

Dilution Factor: 1.00

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|------------|---------------------|-------|------------|---|
| 1. | AIR ARTIFACT | 8.03 | 13 | J |
| 2. | UNKNOWN HYDROCARBON | 18.59 | 7.4 | J |
| 3. | UNKNOWN HYDROCARBON | 22.77 | 10 | J |



UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 5
CHICAGO, ILLINOIS

JUL 24 1989

DATE: JUL 24 1989
SUBJECT: Review of Region 5 data for WC 1 - FREEZER
FROM: Curtis Ross, Director *Edu Yang*
Region 5 Central Regional Laboratory
To: Data User:

Attached are the results for: Soil Samples

CRL Data Set Numbers: RCRA 6294 CASE 12095
Sample Numbers: 89.KV01501-S05 S16-S20, S21, S23-25
Parameter(s): Inorganics (14)
Laboratory: Keystone

Results Status:

- DATA ACCEPTABLE FOR USE*
 DATA QUALIFIED AS TO USE
 DATA UNACCEPTABLE FOR USE

* For data acceptability requirements, refer to the method capability statement for the methods referenced.

Comments by the Quality Control Coordinator:

If there are any questions regarding the data, refer them to David Payne,
the Quality Control Coordinator, at 3-3805

Please sign and date this form below and return it with any comments to:

Sylvia Griffin
Data Management Coordinator
Region 5 Central Regional Laboratory
(5SCR)

TRANSMITTED BY
S. Griffin
JUL 24 1989

U.S. EPA CENTRAL
REGIONAL LAB

RECEIVED BY/DATE:

Comments:



Phone: 412/825-9600

3000 Tech Center Dr., Monroeville, PA 15146

Fax: 412/825-9699

July 11, 1989

USEPA Region V ESD
536 S. Clark Street, 12 1989
Tenth Floor, CRL
Chicago, IL 60605
Attention Mr. Curtis Ross

RECEIVED
CHICAGO S. CLARK REGIONAL LAB.
60605

Dear Mr. Ross:

Please find enclosed the Inorganic Data Package for RCRA Case No. 12095.

Sincerely,

Mary Anna Babich

Mary Anna Babich
CLP Project Manager

MAB/pb

Enclosure

cc: USEPA Environmental Monitoring
Systems Laboratory (EMSL-LV)
944 East Harmon Executive Center
Las Vegas, Nevada 89109

U.S. Environmental Protection Agency
Sample Management Office (SMO)
209 Madison Street, Suite 200
Alexandria, Virginia 22314

KEYSTONE ENVIRONMENTAL RESOURCES

NARRATIVE
CASE 12095

THE DATA CONTAINED IN THIS PACKAGE IS FOR THE RCRA PROGRAM.
PAGES 1-275 WERE REVIEWED BY MARY ANNA BABICH.

00001

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: KEYSTONE-MONROEVILLE Contract: 68-WB-0025

Lab Code: KEYPA Case No.: 12095 SAS No.: SDG No.: MEEZ01

SOW No.: 7/87

| EPA Sample No. | Lab Sample ID. |
|----------------|----------------|
| MEEZ01 | MEEZ01 |
| MEEZ01D | MEEZ01D |
| MEEZ01S | MEEZ01S |
| MEEZ02 | MEEZ02 |
| MEEZ03 | MEEZ03 |
| MEEZ05 | MEEZ05 |
| MEEZ07 | MEEZ07 |
| MEEZ24 | MEEZ24 |
| MEEZ26 | MEEZ26 |
| MEEZ27 | MEEZ27 |
| MEEZ28 | MEEZ28 |
| MEEZ29 | MEEZ29 |
| MEEZ32 | MEEZ32 |
| MEEZ34 | MEEZ34 |
| MEEZ35 | MEEZ35 |
| MEEZ37 | MEEZ37 |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

Were ICP interelement corrections applied? Yes/No YES

Were ICP background corrections applied? Yes/No YES

If Yes-were data generated before application of background corrections? Yes/No NO

Comments:

RCRA
SEE NARRATIVE

Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Lab Manager: _____

Date: _____

00002

B-1 4-5½

EPA SAMPLE NO.

MEEZ01

1
INORGANIC ANALYSIS DATA SHEET

Geo Name: KEYSTONE-MONROEVILLE

Contract: 68-WB-0025

Lab Code: KEYPA Case No.: 12095 SAS No.: SDG No.: MEEZ01

Matrix (soil/water): SOIL Lab Sample ID: MEEZ01

Level (low/med): LOW Date Received: 06/12/89

% Solids: 93.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|----|----|----|
| 7429-90-5 | Aluminum | 4620.00 | | | P |
| 7440-36-0 | Antimony | 7.40 | IU | N | P |
| 7440-38-2 | Arsenic | 1.90 | IB | | F |
| 7440-39-3 | Barium | 51.70 | | | P |
| 7440-41-7 | Beryllium | 0.09 | IU | | P |
| 7440-43-9 | Cadmium | 0.75 | IU | | P |
| 7440-70-2 | Calcium | 2010.00 | | E | P |
| 7440-47-3 | Chromium | 16.60 | | | P |
| 7440-48-4 | Cobalt | 6.20 | IB | | P |
| 7440-50-8 | Copper | 16.40 | | * | P |
| 7439-89-6 | Iron | 13100.00 | | *E | P |
| 7439-92-1 | Lead | 5.50 | | S | F |
| 7439-95-4 | Magnesium | 2480.00 | | E | P |
| 7439-96-5 | Manganese | 260.00 | | NE | P |
| 7439-97-6 | Mercury | 0.12 | | * | CV |
| 7439-02-0 | Nickel | 8.80 | | | P |
| 7440-09-7 | Potassium | 679.00 | IB | | P |
| 7782-49-2 | Selenium | 0.53 | IU | | F |
| 7440-22-4 | Silver | 0.66 | IU | | P |
| 7440-23-5 | Sodium | 80.60 | IB | | P |
| 7440-28-0 | Thallium | 0.53 | IU | | F |
| 7440-62-2 | Vanadium | 20.30 | | | P |
| 7440-66-6 | Zinc | 25.20 | | | P |
| | Cyanide | | | | NR |

Color Before: BROWN

Clarity Before:

Texture: FINE

Color After: BROWN

Clarity After:

Artifacts: YES

Comments:

SAMPLE CONTAINED SAND AND ROCKS

00003

U.S. EPA - CLP

B-1 6 $\frac{1}{2}$ -8'

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MEEZ02

Lab Name: KEYSTONE-MONROEVILLE

Contract: 68-WB-0025

Lab Code: KEYPA

Case No.: 12095

SAS No.:

SDG No.: MEEZ01

Matrix (soil/water): SOIL

Lab Sample ID: MEEZ02

Level (low/med): LOW

Date Received: 06/12/89

% Solids: 91.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|----|----|-----|
| 7429-90-5 | Aluminum | 3620.00 | | | P |
| 7440-36-0 | Antimony | 7.60 | IU | N | P |
| 7440-38-2 | Arsenic | 1.10 | IB | | F |
| 7440-39-3 | Barium | 21.80 | IB | | P |
| 7440-41-7 | Beryllium | 0.09 | IU | | P |
| 7440-43-9 | Cadmium | 0.77 | IU | | P |
| 7440-70-2 | Calcium | 2920.00 | | E | P |
| 7440-47-3 | Chromium | 12.70 | | | P |
| 7440-48-4 | Cobalt | 4.40 | IB | | P |
| 7440-50-8 | Copper | 5.10 | IB | * | P |
| 7439-89-6 | Iron | 14400.00 | | *E | P |
| 7439-92-1 | Lead | 2.70 | | | F |
| 7439-95-4 | Magnesium | 3950.00 | | E | P |
| 7439-96-5 | Manganese | 101.00 | | NE | P |
| 7439-97-6 | Mercury | 0.11 | IU | * | ICV |
| 7439-02-0 | Nickel | 8.40 | IB | | P |
| 7440-09-7 | Potassium | 639.00 | IB | | P |
| 7782-49-2 | Selenium | 0.55 | IU | | F |
| 7440-22-4 | Silver | 0.68 | IU | | P |
| 7440-23-5 | Sodium | 73.20 | IB | | P |
| 7440-28-0 | Thallium | 0.55 | IU | | F |
| 7440-62-2 | Vanadium | 12.50 | | | P |
| 7440-66-6 | Zinc | 22.00 | | | P |
| | Cyanide | | | | INR |

Color Before: BROWN

Clarity Before:

Texture: FINE

Color After: BROWN

Clarity After:

Artifacts: YES

Comments:

SAMPLE CONTAINED SAND AND ROCKS

B-1 9-10^{1/2}'
000041
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MEEZ03

Lab Name: KEYSTONE-MONROEVILLE Contract: 68-W8-0025

Lab Code: KEYPA Case No.: 12095 SAS No.: SDG No.: MEEZ01

Matrix (soil/water): SOIL Lab Sample ID: MEEZ03

Level (low/med): LOW Date Received: 06/12/89

% Solids: 88.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|------------|-----------|---------------|----|----|-----|
| 17429-90-5 | Aluminum | 1780.00 | | | P |
| 17440-36-0 | Antimony | 7.90 | IU | N | P |
| 17440-38-2 | Arsenic | 2.10 | IB | | F |
| 17440-39-3 | Barium | 18.10 | IB | | P |
| 17440-41-7 | Beryllium | 0.09 | IU | | P |
| 17440-43-9 | Cadmium | 0.79 | IU | | P |
| 17440-70-2 | Calcium | 37900.00 | | E | P |
| 17440-47-3 | Chromium | 6.90 | | | P |
| 17440-48-4 | Cobalt | 3.00 | IB | | P |
| 17440-50-8 | Copper | 7.00 | | * | P |
| 17439-89-6 | Iron | 6740.00 | | *E | P |
| 17439-92-1 | Lead | 2.60 | | | F |
| 17439-95-4 | Magnesium | 17400.00 | | E | P |
| 17439-96-5 | Manganese | 200.00 | | NE | P |
| 17439-97-6 | Mercury | 0.11 | IU | * | ICV |
| 17439-02-0 | Nickel | 5.90 | IB | | P |
| 17440-09-7 | Potassium | 348.00 | IB | | P |
| 17782-49-2 | Selenium | 0.57 | IU | | F |
| 17440-22-4 | Silver | 0.70 | IU | | P |
| 17440-23-5 | Sodium | 71.60 | IB | | P |
| 17440-28-0 | Thallium | 0.57 | IU | | F |
| 17440-62-2 | Vanadium | 7.40 | IB | | P |
| 17440-66-6 | Zinc | 12.30 | | | P |
| | Cyanide | | | | INR |

Color Before: BROWN

Clarity Before:

Texture: FINE

Color After: BROWN

Clarity After:

Artifacts: YES

Comments:

SAMPLE CONTAINED SAND AND ROCKS

B-1 14-15½

U.S. EPA - CLP

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1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MEEZ05

Lab Name: KEYSTONE-MONROEVILLE Contract: 68-W8-0025

Lab Code: KEYPA Case No.: 12095 SAS No.: SDG No.: MEEZ01

Matrix (soil/water): SOIL Lab Sample ID: MEEZ05

Level (low/med): LOW Date Received: 06/12/89

% Solids: 86.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|------------|-----------|---------------|---|----|-----|
| 17429-90-5 | Aluminum | 1490.00 | | P | |
| 17440-36-0 | Antimony | 8.00 | U | N | P |
| 17440-38-2 | Arsenic | 1.80 | B | | F |
| 17440-39-3 | Barium | 9.30 | B | | P |
| 17440-41-7 | Beryllium | 0.09 | U | | P |
| 17440-43-9 | Cadmium | 0.81 | U | | P |
| 17440-70-2 | Calcium | 38200.00 | | E | P |
| 17440-47-3 | Chromium | 5.80 | | | P |
| 17440-48-4 | Cobalt | 1.80 | B | | P |
| 17440-50-8 | Copper | 4.50 | B | * | P |
| 17439-89-6 | Iron | 6700.00 | | *E | P |
| 17439-92-1 | Lead | 1.60 | | | F |
| 17439-95-4 | Magnesium | 17400.00 | | E | P |
| 17439-96-5 | Manganese | 118.00 | | NE | P |
| 17439-97-6 | Mercury | 0.12 | U | * | CV |
| 17439-02-0 | Nickel | 4.80 | B | | P |
| 17440-09-7 | Potassium | 301.00 | B | | P |
| 17782-49-2 | Selenium | 0.58 | U | | F |
| 17440-22-4 | Silver | 0.72 | U | | P |
| 17440-23-5 | Sodium | 68.50 | B | | P |
| 17440-28-0 | Thallium | 0.58 | U | | F |
| 17440-62-2 | Vanadium | 5.50 | B | | P |
| 17440-66-6 | Zinc | 7.50 | | | P |
| | Cyanide | | | | INR |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:

SAMPLE CONTAINED SAND AND ROCKS

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1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MEEZ07

Lab Name: KEYSTONE-MONROEVILLE

Contract: 68-WB-0025

Lab Code: KEYPA

Case No.: 12095

SAS No.:

SDG No.: MEEZ01

Matrix (soil/water): SOIL

Lab Sample ID: MEEZ07

Level (low/med): LOW

Date Received: 06/12/89

% Solids: 85.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|----|----|-----|
| 7429-90-5 | Aluminum | 1310.00 | | | IP |
| 7440-36-0 | Antimony | 8.10 | IU | N | IP |
| 7440-38-2 | Arsenic | 1.60 | IB | | IF |
| 7440-39-3 | Barium | 9.60 | IB | | IP |
| 7440-41-7 | Beryllium | 0.09 | IU | | IP |
| 7440-43-9 | Cadmium | 0.82 | IU | | IP |
| 7440-70-2 | Calcium | 37200.00 | I | E | IP |
| 7440-47-3 | Chromium | 4.60 | | | IP |
| 7440-48-4 | Cobalt | 1.80 | IB | | IP |
| 7440-50-8 | Copper | 3.60 | IB | * | IP |
| 7439-89-6 | Iron | 4030.00 | I | *E | IP |
| 7439-92-1 | Lead | 1.30 | I | | IF |
| 7439-95-4 | Magnesium | 10400.00 | I | E | IP |
| 7439-96-5 | Manganese | 119.00 | I | NE | IP |
| 7439-97-6 | Mercury | 0.12 | IU | * | ICV |
| 7439-02-0 | Nickel | 3.50 | IB | | IP |
| 7440-09-7 | Potassium | 263.00 | IB | | IP |
| 7782-49-2 | Selenium | 0.58 | IU | | IF |
| 7440-22-4 | Silver | 0.72 | IU | | IP |
| 7440-23-5 | Sodium | 57.70 | IB | | IP |
| 7440-28-0 | Thallium | 0.58 | IU | | IF |
| 7440-62-2 | Vanadium | 5.20 | IB | | IP |
| 7440-66-6 | Zinc | 6.80 | I | | IP |
| | Cyanide | | I | | INR |

Color Before: BROWN

Clarity Before:

Texture: FINE

Color After: BROWN

Clarity After:

Artifacts: YES

Comments:

SAMPLE CONTAINED SAND AND ROCKS

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00007

EPA SAMPLE NO.

MEEZ24

INORGANIC ANALYSIS DATA SHEET

1

Lab Name: KEYSTONE-MONROEVILLE Contract: 68-W8-0025

Lab Code: KEYPA Case No.: 12095 SAS No.: SDG No.: MEEZ01

Matrix (soil/water): SOIL Lab Sample ID: MEEZ24

Level (low/med): LOW Date Received: 06/12/89

% Solids: 93.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|----|----|----|
| 7429-90-5 | Aluminum | 5320.00 | | | P |
| 7440-36-0 | Antimony | 7.40 | IU | N | P |
| 7440-38-2 | Arsenic | 3.00 | | | F |
| 7440-39-3 | Barium | 55.30 | | | P |
| 7440-41-7 | Beryllium | 0.09 | IU | | P |
| 7440-43-9 | Cadmium | 0.75 | IU | | P |
| 7440-70-2 | Calcium | 19500.00 | | E | P |
| 7440-47-3 | Chromium | 13.30 | | | P |
| 7440-48-4 | Cobalt | 5.70 | IB | | P |
| 7440-50-8 | Copper | 16.80 | | * | P |
| 7439-89-6 | Iron | 12800.00 | | *E | P |
| 7439-92-1 | Lead | 7.50 | | | F |
| 7439-95-4 | Magnesium | 8960.00 | | E | P |
| 7439-96-5 | Manganese | 459.00 | | NE | P |
| 7439-97-6 | Mercury | 0.12 | | * | CV |
| 7439-02-0 | Nickel | 12.10 | | | P |
| 7440-09-7 | Potassium | 618.00 | IB | | P |
| 7782-49-2 | Selenium | 0.53 | IU | | F |
| 7440-22-4 | Silver | 0.66 | IU | | P |
| 7440-23-5 | Sodium | 121.00 | IB | | P |
| 7440-28-0 | Thallium | 0.53 | IU | | F |
| 7440-62-2 | Vanadium | 15.50 | | | P |
| 7440-66-6 | Zinc | 29.60 | | | P |
| | Cyanide | | | | NR |

Color Before: BROWN Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:

SAMPLE CONTAINED SAND AND ROCKS

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00008

EPA SAMPLE NO.

1

INORGANIC ANALYSIS DATA SHEET

MEEZ26

Lab. Name: KEYSTONE-MONROEVILLE

Contract: 68-W8-0025

Lab Code: KEYPA

Case No.: 12095

SAS No.:

SDG No.: MEEZ01

Matrix (soil/water): SOIL

Lab Sample ID: MEEZ26

Level (low/med): LOW

Date Received: 06/12/89

Solids: 90.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|----|----|----|
| 7429-90-5 | Aluminum | 2140.00 | | P | |
| 7440-36-0 | Antimony | 7.70 | IU | N | P |
| 7440-38-2 | Arsenic | 1.60 | IB | | F |
| 7440-39-3 | Barium | 23.90 | IB | | P |
| 7440-41-7 | Beryllium | 0.09 | IU | | P |
| 7440-43-9 | Cadmium | 0.77 | IU | | P |
| 7440-70-2 | Calcium | 38200.00 | | E | P |
| 7440-47-3 | Chromium | 13.40 | | | P |
| 7440-48-4 | Cobalt | 3.80 | IB | | P |
| 7440-50-8 | Copper | 8.30 | | * | P |
| 7439-89-6 | Iron | 15700.00 | | *E | P |
| 7439-92-1 | Lead | 2.30 | | | F |
| 7439-95-4 | Magnesium | 21000.00 | | E | P |
| 7439-96-5 | Manganese | 438.00 | | NE | P |
| 7439-97-6 | Mercury | 0.11 | IU | * | CV |
| 7439-02-0 | Nickel | 10.30 | | | P |
| 7440-09-7 | Potassium | 498.00 | IB | | P |
| 7782-49-2 | Selenium | 0.55 | IU | W | F |
| 7440-22-4 | Silver | 0.68 | IU | | P |
| 7440-23-5 | Sodium | 112.00 | IB | | P |
| 7440-28-0 | Thallium | 0.55 | IU | | F |
| 7440-62-2 | Vanadium | 9.60 | IB | | P |
| 7440-66-6 | Zinc | 12.90 | | | P |
| | Cyanide | | | | NR |

Color Before: BROWN

Clarity Before:

Texture: FINE

Color After: BROWN

Clarity After:

Artifacts: YES

Comments:

SAMPLE CONTAINED SAND AND ROCKS

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1
INORGANIC ANALYSIS DATA SHEETEPA SAMPLE NO.
MEEZ27

Lab Name: KEYSTONE-MONROEVILLE Contract: 68-WB-0025

Lab Code: KEYPA Case No.: 12095 SAS No.: SDG No.: MEEZ01

Matrix (soil/water): SOIL Lab Sample ID: MEEZ27

Level (low/med): LOW Date Received: 06/12/89

% Solids: 84.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|------------|-----------|---------------|----|----|-----|
| 17429-90-5 | Aluminum | 2460.00 | | | IP |
| 17440-36-0 | Antimony | 8.20 | IU | N | IP |
| 17440-38-2 | Arsenic | 1.30 | IB | | IF |
| 17440-39-3 | Barium | 23.70 | IB | | IP |
| 17440-41-7 | Beryllium | 0.09 | IU | | IP |
| 17440-43-9 | Cadmium | 0.83 | IU | | IP |
| 17440-70-2 | Calcium | 45500.00 | | E | IP |
| 17440-47-3 | Chromium | 10.00 | | | IP |
| 17440-48-4 | Cobalt | 4.20 | IB | | IP |
| 17440-50-8 | Copper | 7.30 | | * | IP |
| 17439-89-6 | Iron | 12100.00 | | *E | IP |
| 17439-92-1 | Lead | 2.20 | | | IF |
| 17439-95-4 | Magnesium | 25300.00 | | E | IP |
| 17439-96-5 | Manganese | 466.00 | | NE | IP |
| 17439-97-6 | Mercury | 0.12 | IU | * | ICV |
| 17439-02-0 | Nickel | 11.30 | | | IP |
| 17440-09-7 | Potassium | 437.00 | IB | | IP |
| 17782-49-2 | Selenium | 0.59 | IU | W | IF |
| 17440-22-4 | Silver | 0.73 | IU | | IP |
| 17440-23-5 | Sodium | 105.00 | IB | | IP |
| 17440-28-0 | Thallium | 0.59 | IU | | IF |
| 17440-62-2 | Vanadium | 10.70 | IB | | IP |
| 17440-66-6 | Zinc | 14.80 | | | IP |
| | Cyanide | | | | INR |

Color Before: BROWN

Clarity Before:

Texture: FINE

Color After: BROWN

Clarity After:

Artifacts: YES

Comments:

SAMPLE CONTAINED SAND AND ROCKS

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1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MEEZ2B

Lab Name: KEYSTONE-MONROEVILLE

Contract: 68-WB-0025

Lab Code: KEYPA

Case No.: 12095

SAS No.:

SDG No.: MEEZ01

Matrix (soil/water): SOIL

Lab Sample ID: MEEZ2B

Level (low/med): LOW

Date Received: 06/12/89

% Solids: 89.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|----|----|-----|
| 7429-90-5 | Aluminum | 1700.00 | | | P |
| 7440-36-0 | Antimony | 7.80 | IU | N | P |
| 7440-38-2 | Arsenic | 0.96 | IB | | F |
| 7440-39-3 | Barium | 13.50 | IB | | P |
| 7440-41-7 | Beryllium | 0.09 | IU | | P |
| 7440-43-9 | Cadmium | 0.78 | IU | | P |
| 7440-70-2 | Calcium | 45400.00 | | E | P |
| 7440-47-3 | Chromium | 5.90 | | | P |
| 7440-48-4 | Cobalt | 2.40 | IB | | P |
| 7440-50-8 | Copper | 6.10 | | * | P |
| 7439-89-6 | Iron | 7810.00 | | *E | P |
| 7439-92-1 | Lead | 1.70 | | | F |
| 7439-95-4 | Magnesium | 10800.00 | | E | P |
| 7439-96-5 | Manganese | 246.00 | | NE | P |
| 7439-97-6 | Mercury | 0.11 | IU | * | ICV |
| 7439-02-0 | Nickel | 7.30 | IB | | P |
| 7440-09-7 | Potassium | 270.00 | IB | | P |
| 7782-49-2 | Selenium | 0.56 | IU | | F |
| 7440-22-4 | Silver | 0.69 | IU | | P |
| 7440-23-5 | Sodium | 89.30 | IB | | P |
| 7440-28-0 | Thallium | 0.56 | IU | W | F |
| 7440-62-2 | Vanadium | 8.90 | IB | | P |
| 7440-66-6 | Zinc | 9.60 | | | P |
| | Cyanide | | | | INR |

Color Before: BROWN

Clarity Before:

Texture: FINE

Color After: BROWN

Clarity After:

Artifacts: YES

Comments:

SAMPLE CONTAINED SAND AND ROCKS

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U.S. EPA - CLP

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1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MEEZ29

Lab Name: KEYSTONE-MONROEVILLE

Contract: 68-W8-0025

Lab Code: KEYPA

Case No.: 12095

SAS No.:

SDG No.: MEEZ01

Matrix (soil/water): SOIL

Lab Sample ID: MEEZ29

Level (low/med): LOW

Date Received: 06/12/89

% Solids: 91.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|----|----|----|
| 7429-90-5 | Aluminum | 4870.00 | | | P |
| 7440-36-0 | Antimony | 7.60 | IU | N | P |
| 7440-38-2 | Arsenic | 1.40 | IB | | F |
| 7440-39-3 | Barium | 35.30 | IB | | P |
| 7440-41-7 | Beryllium | 0.09 | IU | | P |
| 7440-43-9 | Cadmium | 0.77 | IU | | P |
| 7440-70-2 | Calcium | 12200.00 | | E | P |
| 7440-47-3 | Chromium | 14.20 | | | P |
| 7440-48-4 | Cobalt | 6.00 | IB | | P |
| 7440-50-8 | Copper | 11.90 | | * | P |
| 7439-89-6 | Iron | 10800.00 | | *E | P |
| 7439-92-1 | Lead | 3.00 | | | F |
| 7439-95-4 | Magnesium | 5570.00 | | E | P |
| 7439-96-5 | Manganese | 232.00 | | NE | P |
| 7439-97-6 | Mercury | 0.11 | IU | * | CV |
| 7439-02-0 | Nickel | 16.40 | | | P |
| 7440-09-7 | Potassium | 695.00 | IB | | P |
| 7782-49-2 | Selenium | 0.55 | IU | | F |
| 7440-22-4 | Silver | 0.68 | IU | | P |
| 7440-23-5 | Sodium | 133.00 | IB | | P |
| 7440-28-0 | Thallium | 0.55 | IU | | F |
| 7440-62-2 | Vanadium | 19.00 | | | P |
| 7440-66-6 | Zinc | 22.10 | | | P |
| | Cyanide | | | | NR |

Color Before: BROWN

Clarity Before:

Texture: FINE

Color After: BROWN

Clarity After:

Artifacts: YES

Comments:

SAMPLE CONTAINED SAND AND ROCKS

00012

B-5 14-15½

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MEEZ32

Lab Name: KEYSTONE-MONROEVILLE Contract: 68-WB-0025

Lab Code: KEYPA Case No.: 12095 SAS No.: SDG No.: MEEZ01

Matrix (soil/water): SOIL Lab Sample ID: MEEZ32

Level (low/med): LOW Date Received: 06/12/89

% Solids: 89.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|----|----|-----|
| 7429-90-5 | Aluminum | 2660.00 | | | P |
| 7440-36-0 | Antimony | 7.80 | IU | N | P |
| 7440-38-2 | Arsenic | 1.90 | IB | | F |
| 7440-39-3 | Barium | 13.60 | IB | | P |
| 7440-41-7 | Beryllium | 0.09 | IU | | P |
| 7440-43-9 | Cadmium | 0.78 | IU | | P |
| 7440-70-2 | Calcium | 33700.00 | | E | P |
| 7440-47-3 | Chromium | 8.40 | | | P |
| 7440-48-4 | Cobalt | 9.50 | IB | | P |
| 7440-50-8 | Copper | 7.50 | | * | P |
| 7439-89-6 | Iron | 16600.00 | | *E | P |
| 7439-92-1 | Lead | 2.30 | | | F |
| 7439-95-4 | Magnesium | 27400.00 | | E | P |
| 7439-96-5 | Manganese | 155.00 | | NE | P |
| 7439-97-6 | Mercury | 0.11 | IU | * | CV |
| 7439-02-0 | Nickel | 14.00 | | | P |
| 7440-09-7 | Potassium | 510.00 | IB | | P |
| 7782-49-2 | Selenium | 0.56 | IU | | F |
| 7440-22-4 | Silver | 0.70 | IU | | P |
| 7440-23-5 | Sodium | 113.00 | IB | | P |
| 7440-28-0 | Thallium | 0.56 | IU | | F |
| 7440-62-2 | Vanadium | 12.50 | | | P |
| 7440-66-6 | Zinc | 21.70 | | | P |
| | Cyanide | | | | INR |

Color Before: GREY

Clarity Before:

Texture: FINE

Color After: BROWN

Clarity After:

Artifacts: YES

Comments:

SAMPLE CONTAINED SAND AND ROCKS

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1
INORGANIC ANALYSIS DATA SHEET

EPA 0013
SAMPLE NO.

MEEZ34

Lab Name: KEYSTONE-MONROEVILLE Contract: 68-WB-0025

Lab Code: KEYPA Case No.: 12095 SAS No.: SDG No.: MEEZ01

Matrix (soil/water): SOIL Lab Sample ID: MEEZ34

Level (low/med): LOW Date Received: 06/12/89

% Solids: 87.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|----|----|----|
| 7429-90-5 | Aluminum | 1960.00 | | | P |
| 7440-36-0 | Antimony | 8.00 | IU | N | P |
| 7440-38-2 | Arsenic | 0.78 | IB | | F |
| 7440-39-3 | Barium | 9.80 | IB | | P |
| 7440-41-7 | Beryllium | 0.09 | IU | | P |
| 7440-43-9 | Cadmium | 0.80 | IU | | P |
| 7440-70-2 | Calcium | 13000.00 | | E | P |
| 7440-47-3 | Chromium | 8.30 | | | P |
| 7440-48-4 | Cobalt | 4.90 | IB | | P |
| 7440-50-8 | Copper | 6.20 | | * | P |
| 7439-89-6 | Iron | 11500.00 | | *E | P |
| 7439-92-1 | Lead | 1.90 | | | F |
| 7439-95-4 | Magnesium | 11100.00 | | E | P |
| 7439-96-5 | Manganese | 78.50 | | NE | P |
| 7439-97-6 | Mercury | 0.11 | IU | * | CV |
| 7439-02-0 | Nickel | 9.00 | IB | | P |
| 7440-09-7 | Potassium | 314.00 | IB | | P |
| 7782-49-2 | Selenium | 0.57 | IU | | F |
| 7440-22-4 | Silver | 0.71 | IU | | P |
| 7440-23-5 | Sodium | 133.00 | IB | | P |
| 7440-28-0 | Thallium | 0.57 | IU | | F |
| 7440-62-2 | Vanadium | 9.00 | IB | | P |
| 7440-66-6 | Zinc | 12.60 | | | P |
| | Cyanide | | | | NR |

Color Before: GREY

Clarity Before:

Texture: FINE

Color After: BROWN

Clarity After:

Artifacts: YES

Comments:

SAMPLE CONTAINED SAND AND ROCKS

U.S. EPA - CLP

B-5 19-20½

00014

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MEEZ35

Lab Name: KEYSTONE-MONROEVILLE

Contract: 68-W8-0025

Lab Code: KEYPA

Case No.: 12095

SAS No.:

SDG No.: MEEZ01

Matrix (soil/water): SOIL

Lab Sample ID: MEEZ35

Level (low/med): LOW

Date Received: 06/12/89

% Solids: 85.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|------------|-----------|---------------|-----|----|----|
| 17429-90-5 | Aluminum | 1240.00 | I | I | P |
| 17440-36-0 | Antimony | 8.10 | IU | N | P |
| 17440-38-2 | Arsenic | 0.58 | IBI | | F |
| 17440-39-3 | Barium | 10.10 | IBI | | P |
| 17440-41-7 | Beryllium | 0.09 | IU | | P |
| 17440-43-9 | Cadmium | 0.82 | IU | | P |
| 17440-70-2 | Calcium | 9410.00 | I | E | P |
| 17440-47-3 | Chromium | 5.00 | I | I | P |
| 17440-48-4 | Cobalt | 3.50 | IBI | | P |
| 17440-50-8 | Copper | 3.60 | IBI | * | P |
| 17439-89-6 | Iron | 6290.00 | I | *E | P |
| 17439-92-1 | Lead | 1.80 | I | | F |
| 17439-95-4 | Magnesium | 6080.00 | I | E | P |
| 17439-96-5 | Manganese | 54.60 | I | NE | P |
| 17439-97-6 | Mercury | 0.12 | IU | * | CV |
| 17439-02-0 | Nickel | 4.70 | IBI | | P |
| 17440-09-7 | Potassium | 396.00 | IBI | | P |
| 17782-49-2 | Selenium | 0.58 | IU | | F |
| 17440-22-4 | Silver | 0.72 | IU | | P |
| 17440-23-5 | Sodium | 159.00 | IBI | | P |
| 17440-28-0 | Thallium | 0.58 | IU | | F |
| 17440-62-2 | Vanadium | 5.00 | IBI | | P |
| 17440-66-6 | Zinc | 8.20 | I | | P |
| | Cyanide | | I | | NR |

Color Before: GREY

Clarity Before:

Texture: FINE

Color After: BROWN

Clarity After:

Artifacts: YES

Comments:

SAMPLE CONTAINED SAND AND ROCKS

B-5 24-25½

00015

U.S. EPA - CLP

EPA SAMPLE NO.

MEEZ37

1
INORGANIC ANALYSIS DATA SHEET

Lab Name: KEYSTONE-MONROEVILLE Contract: 68-W8-0025

Lab Code: KEYPA Case No.: 12095 SAS No.: SDG No.: MEEZ01

Matrix (soil/water): SOIL Lab Sample ID: MEEZ37

Level (low/med): LOW Date Received: 06/12/89

% Solids: 88.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|----|----|-----|
| 7429-90-5 | Aluminum | 1380.00 | | | P |
| 7440-36-0 | Antimony | 7.90 | IU | N | P |
| 7440-38-2 | Arsenic | 0.79 | BI | | F |
| 7440-39-3 | Barium | 12.10 | BI | | P |
| 7440-41-7 | Beryllium | 0.09 | IU | | P |
| 7440-43-9 | Cadmium | 0.79 | IU | | P |
| 7440-70-2 | Calcium | 22700.00 | | E | P |
| 7440-47-3 | Chromium | 4.60 | | | P |
| 7440-48-4 | Cobalt | 2.50 | BI | | P |
| 7440-50-8 | Copper | 3.80 | BI | * | P |
| 7439-89-6 | Iron | 5990.00 | | *E | P |
| 7439-92-1 | Lead | 3.60 | | | F |
| 7439-95-4 | Magnesium | 11400.00 | | E | P |
| 7439-96-5 | Manganese | 292.00 | | NE | P |
| 7439-97-6 | Mercury | 0.11 | IU | * | CV |
| 7439-02-0 | Nickel | 5.40 | BI | | P |
| 7440-09-7 | Potassium | 239.00 | BI | | P |
| 7782-49-2 | Selenium | 0.57 | IU | W | F |
| 7440-22-4 | Silver | 0.70 | IU | | P |
| 7440-23-5 | Sodium | 80.00 | BI | | P |
| 7440-28-0 | Thallium | 0.57 | IU | | F |
| 7440-62-2 | Vanadium | 5.50 | BI | | P |
| 7440-66-6 | Zinc | 7.80 | | | P |
| | Cyanide | | | | INR |

Color Before: GREY Clarity Before: Texture: FINE

Color After: BROWN Clarity After: Artifacts: YES

Comments:

SAMPLE CONTAINED SAND AND ROCKS

3
BLANKS

00024

Lab Name: KEYSTONE-MONROEVILLE

Contract: 68-WB-0025

Lab Code: KEYPA

Case No.: 12095

SAS No.:

SDG No.: MEEZ01

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

| Element | Initial Calib. Blank (ug/L) | Continuing Calibration Blank (ug/L) | | | Preparation Blank (ug/L) | | | M |
|-----------|--------------------------------|----------------------------------------|-------|-----|-----------------------------|-----|-------|-----|
| | | 1 | C | 2 | C | 3 | C | |
| Aluminum | 28.5 | IU | 32.9 | IBI | 28.5 | IU | 28.5 | IU |
| Antimony | 34.8 | IU | 34.8 | IU | 34.8 | IU | 34.8 | IU |
| Arsenic | 2.2 | IU | 2.2 | IU | 2.2 | IU | 2.2 | IU |
| Barium | 14.8 | IU | 14.8 | IU | 14.8 | IU | 14.8 | IU |
| Beryllium | 0.4 | IU | 0.4 | IU | 0.4 | IU | 0.4 | IU |
| Manganese | 3.5 | IU | 3.5 | IU | 3.5 | IU | 3.5 | IU |
| Calcium | 11.0 | IU | 18.0 | IBI | 11.0 | IU | 16.1 | IBI |
| Chromium | 3.4 | IU | 3.4 | IU | 3.4 | IU | 3.4 | IU |
| Cobalt | 2.8 | IU | 2.8 | IU | 2.8 | IU | 2.8 | IU |
| Copper | 2.8 | IU | 4.5 | IBI | 3.0 | IBI | 4.3 | IBI |
| Iron | 9.6 | IU | 27.3 | IBI | 13.6 | IBI | 9.6 | IU |
| Lead | 2.1 | IU | 2.5 | IBI | 2.1 | IU | 2.1 | IU |
| Magnesium | 28.7 | IU | 49.3 | IBI | 28.7 | IU | 28.7 | IU |
| Manganese | 0.9 | IU | 0.9 | IU | 0.9 | IU | 0.9 | IU |
| Mercury | 0.2 | IU | 0.2 | IU | 0.2 | IU | 0.2 | IU |
| Nickel | 12.8 | IU | 12.8 | IU | 12.8 | IU | 12.8 | IU |
| Potassium | 594.6 | IU | 594.6 | IU | 594.6 | IU | 641.2 | IBI |
| Selenium | 2.5 | IU | 2.5 | IU | 2.5 | IU | 2.5 | IU |
| Silver | 3.1 | IU | 3.1 | IU | 3.1 | IU | 3.1 | IU |
| Sodium | -67.5 | IBI | 44.3 | IU | -134.7 | IBI | -82.4 | IBI |
| Thallium | 2.5 | IU | 2.5 | IU | 2.5 | IU | 2.5 | IU |
| Vanadium | 2.4 | IU | 2.4 | IU | 2.4 | IU | 2.4 | IU |
| Zinc | -5.6 | IBI | -4.3 | IBI | 3.6 | IBI | -4.1 | IBI |
| Cyanide | | | | | | | | INR |

00025

3
BLANKS

Lab Name: KEYSTONE-MONROEVILLE

Contract: 68-WB-0025

Lab Code: KEYPA

Case No.: 12095

SAS No.:

SDG No.: MEEZ01

Preparation Blank Matrix (soil/water):

Preparation Blank Concentration Units (ug/L or mg/kg):

| Analyte | Initial Calib. Blank (ug/L) | Continuing Calibration Blank (ug/L) | | | | | | Prepa- ration Blank | C | M |
|-----------|--------------------------------------|----------------------------------------|-----|-------|-----|-----|-----|---------------------------|---|-----|
| | | 1 | C | 2 | C | 3 | C | | | |
| Aluminum | | 28.5 | IU | 34.8 | IU | | | | | F |
| Antimony | | 34.8 | IU | 34.8 | IU | | | | | F |
| Arsenic | 2.2 | IU | 2.2 | IU | 2.2 | IU | 2.2 | IU | | F |
| Barium | | 14.8 | IU | 14.8 | IU | | | | | P |
| Beryllium | | 0.4 | IU | 0.4 | IU | | | | | P |
| Mium | | 3.5 | IU | 3.5 | IU | | | | | P |
| Calcium | | 11.0 | IU | 11.0 | IU | | | | | P |
| Chromium | | 3.4 | IU | 3.4 | IU | | | | | P |
| Cobalt | | 2.8 | IU | 2.8 | IU | | | | | P |
| Copper | | 2.8 | IU | 2.8 | IU | | | | | P |
| Iron | | 24.0 | IU | | | | | | | P |
| Lead | | 2.1 | IU | 2.1 | IU | 2.1 | IU | | | F |
| Magnesium | | 39.1 | IU | | | | | | | P |
| Manganese | | 0.9 | IU | 0.9 | IU | | | | | P |
| Mercury | | | | | | | | | | |
| Nickel | | 12.8 | IU | 12.8 | IU | | | | | P |
| Potassium | | 594.6 | IU | 594.6 | IU | | | | | P |
| Selenium | | 2.5 | IU | | | | | | | F |
| Silver | | 3.1 | IU | 3.1 | IU | | | | | P |
| Sodium | | -92.2 | IU | -92.2 | IU | | | | | P |
| Thallium | | 2.5 | IU | | | | | | | F |
| Vanadium | | 2.4 | IU | 2.4 | IU | | | | | P |
| Zinc | | -4.8 | IU | -6.5 | IU | | | | | P |
| Cyanide | | | | | | | | | | INR |

3
BLANKS

00026

Lab Name: KEYSTONE-MONROEVILLE

Contract: 68-WB-0025

Lab Code: KEYPA

Case No.: 12095

SAS No.:

SDG No.: MEEZ01

Preparation Blank Matrix (soil/water):

Preparation Blank Concentration Units (ug/L or mg/kg):

| Analyte | Initial Calib. Blank (ug/L) | Continuing Calibration Blank (ug/L) | | | Prepa- ration Blank | | | M |
|-----------|-----------------------------------|----------------------------------------|-----|---|---------------------------|---|-----|----|
| | | C | 1 | C | 2 | C | 3 | |
| Aluminum | | | | | | | | |
| Antimony | | | | | | | | |
| Arsenic | 3.7 | B | 2.2 | U | 3.9 | B | | F |
| Barium | | | | | | | | |
| Beryllium | | | | | | | | |
| Manganese | | | | | | | | |
| Calcium | | | | | | | | |
| Chromium | | | | | | | | |
| Cobalt | | | | | | | | |
| Copper | | | | | | | | |
| Iron | | | | | | | | |
| Lead | | | | | | | | |
| Magnesium | | | | | | | | |
| Manganese | | | | | | | | |
| Mercury | | | | | | | | |
| Nickel | | | | | | | | |
| Potassium | | | | | | | | |
| Selenium | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| Silver | | | | | | | | |
| Sodium | | | | | | | | |
| Thallium | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| Titanium | | | | | | | | |
| Zinc | | | | | | | | |
| Cyanide | | | | | | | | NR |

3
BLANKS

Lab Name: KEYSTONE-MONROEVILLE

Contract: 68-WB-0025

Lab Code: KEYFA

Case No.: 12095

SAS No.:

SDG No.: MEEZ01

Preparation Blank Matrix (soil/water):

Preparation Blank Concentration Units (ug/L or mg/kg):

| Analyte | Initial Calib. Blank (ug/L) | Continuing Calibration Blank (ug/L) | | | Prepa- ration Blank | | | C M |
|-----------|-----------------------------------|----------------------------------------|--------|--------|---------------------------|--------|--------|--------|
| | | C 1 | C 2 | C 3 | C 1 | C 2 | C 3 | |
| Aluminum | | | | | | | | |
| Antimony | | | | | | | | |
| Arsenic | | | | | | | | |
| Barium | | | | | | | | |
| Beryllium | | | | | | | | |
| Lanthanum | | | | | | | | |
| Calcium | | | | | | | | |
| Chromium | | | | | | | | |
| Cobalt | | | | | | | | |
| Copper | | | | | | | | |
| Iron | | | | | | | | |
| Lead | | | | | | | | |
| Magnesium | | | | | | | | |
| Manganese | | | | | | | | |
| Mercury | | | | | | | | |
| Nickel | | | | | | | | |
| Potassium | | | | | | | | |
| Selenium | | 2.5 | 10 | | | | | F |
| Silver | | | | | | | | |
| Sodium | | | | | | | | |
| Thallium | | | | | | | | |
| Vanadium | | | | | | | | |
| Zinc | | | | | | | | |
| Cyanide | | | | | | | | NR |

00029

U.S. EPA - CLP

SA
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

MEEZ01S

Lab Name: KEYSTONE-MONROEVILLE

Contract: 68-WB-0025

Lab Code: KEYPA

Case No.: 12095

SAS No.:

SDG No.: MEEZ01

Matrix (soil/water): SOIL

Level (low/med): LOW

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| Analyte | Control | | Sample C | Spike Added (SA) | %R | Q/M |
|-----------|---------|----------------------------|----------|------------------|-------|-----|
| | Limit | Spiked Sample Result (SSR) | | | | |
| Aluminum | | | | | | INR |
| Antimony | 75-125 | 52.1772 | 7.4280\|U\| | 106.7 | 48.9 | IP |
| Arsenic | 75-125 | 9.4771 | 1.9424\|B\| | 8.5 | 88.6 | IF |
| Barium | 75-125 | 499.3320 | 51.7417\| | 426.9 | 104.8 | IP |
| Beryllium | 75-125 | 10.7364 | 0.0854\|U\| | 10.7 | 100.3 | IP |
| Cadmium | 75-125 | 11.7289 | 0.7471\|U\| | 10.7 | 109.6 | IP |
| Calcium | | | | | | INR |
| Chromium | 75-125 | 64.2924 | 16.5977\| | 42.7 | 111.7 | IP |
| Cobalt | 75-125 | 114.7834 | 6.1964\|B\| | 106.7 | 101.8 | IP |
| Copper | 75-125 | 57.5283 | 16.3778\| | 53.4 | 77.1 | IP |
| Iron | | | | | | INR |
| Lead | 75-125 | 9.0075 | 5.5413\| | 4.3 | 80.6 | IP |
| Magnesium | | | | | | INR |
| Manganese | 75-125 | 398.3671 | 259.9915\| | 106.7 | 129.7 | INP |
| Mercury | 75-125 | 0.5923 | 0.1158\| | 0.5 | 95.3 | ICV |
| Nickel | 75-125 | 116.4482 | 8.8346\| | 106.7 | 100.9 | IP |
| Potassium | | | | | | INR |
| Selenium | 75-125 | 1.8570 | 0.5336\|U\| | 2.1 | 88.4 | IP |
| Silver | 75-125 | 8.1708 | 0.6617\|U\| | 10.7 | 76.4 | IP |
| Sodium | | | | | | INR |
| Tellurium | 75-125 | 9.6265 | 0.5336\|U\| | 10.7 | 90.0 | IP |
| Vanadium | 75-125 | 128.8196 | 20.2903\| | 106.7 | 101.7 | IP |
| Zinc | 75-125 | 134.3991 | 25.1569\| | 106.7 | 102.4 | IP |
| Uranide | | | | | | INR |

Comments:

00000

U.S. EPA - CLP

5B

POST DIGEST SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

MEEZ37A

Lab Name: KEYSTONE-MONROEV LLE

Contract: 68-W8-0025

Lab Code: KEYPA

Case No.: 12095

SAS No.:

SDG No.: MEEZ01

Matrix (soil/water): SOIL

Level (low/med): LOW

Concentrations Units: UG/L

| Analyte | Control | Spiked Sample Result (SSR) | C | Sample | Spike | %R | Q/M |
|-----------|---------|-------------------------------|---|-------------|-------|--------|-------|
| | Limit | | | Result (SR) | C | | |
| Aluminum | | | | | | | NR |
| Antimony | | 121.75 | | 34.80 | U | 120.0 | 101.5 |
| Arsenic | | | | | | | NR |
| Barium | | | | | | | NR |
| Beryllium | | | | | | | NR |
| Cadmium | | | | | | | NR |
| Calcium | | | | | | | NR |
| Chromium | | | | | | | NR |
| Cobalt | | | | | | | NR |
| Copper | | | | | | | NR |
| Iron | | | | | | | NR |
| Lead | | | | | | | NR |
| Magnesium | | | | | | | NR |
| Manganese | | 3561.96 | | 1292.66 | | 2440.0 | 93.0 |
| Mercury | | | | | | | IP |
| Nickel | | | | | | | NR |
| Potassium | | | | | | | NR |
| Selenium | | | | | | | NR |
| Silver | | | | | | | NR |
| Sodium | | | | | | | NR |
| Thallium | | | | | | | NR |
| Vanadium | | | | | | | NR |
| Zinc | | | | | | | NR |
| Cyanide | | | | | | | NR |

Comments:

6
DUPLICATES

EPA SAMPLE NO.

MEEZOID

Lab Name: KEYSTONE-MONROEVILLE Contract: 68-WB-0025

Lab Code: KEYPA Case No.: 12095 SAS No.: SDG No.: MEEZ01

Matrix (soil/water): SOIL Level (low/med): LOW

Solids for Sample: 93.7

% Solids for Duplicate: 92.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| Analyte | Control Limit | Sample (S) | C | Duplicate (D) | C | RPD | Q/M |
|-----------|---------------|------------|----|---------------|----|-------|-----|
| Aluminum | | 4622.3247 | | 4488.9458 | | 2.9 | IP |
| Antimony | | 7.4280 | IU | 7.4280 | IU | | IP |
| Arsenic | 2.1 | 1.9424 | B | 2.8602 | | 38.2 | IF |
| Barium | 42.7 | 51.7417 | | 52.7705 | | 2.0 | IP |
| Beryllium | | 0.0854 | IU | 0.0854 | IU | | IP |
| Cadmium | | 0.7471 | IU | 0.7471 | IU | | IP |
| Calcium | 1067.2 | 2006.6874 | | 1922.4634 | | 4.3 | IP |
| Chromium | | 16.5977 | | 14.5699 | | 13.0 | IP |
| Cobalt | | 6.1964 | B | 5.6350 | B | 9.5 | IP |
| Copper | 5.3 | 16.3778 | | 8.3671 | | 64.7 | *IP |
| Iron | | 13064.6748 | | 16259.1260 | | 21.8 | *IP |
| Lead | | 5.5413 | | 5.9765 | | 7.6 | IF |
| Magnesium | 1067.2 | 2484.3118 | | 2842.6897 | | 13.5 | IP |
| Manganese | | 259.9915 | | 293.2166 | | 12.0 | IP |
| Mercury | 0.1 | 0.1158 | | 0.1067 | IU | 200.0 | *CV |
| Nickel | 8.5 | 8.8346 | | 8.9861 | | 1.7 | IP |
| Potassium | | 679.2188 | B | 706.0876 | B | 3.9 | IP |
| Selenium | | 0.5336 | IU | 0.5336 | IU | | IF |
| Silver | | 0.6617 | IU | 0.6617 | IU | | IP |
| Sodium | | 80.6169 | B | 72.0939 | B | 11.2 | IP |
| Thallium | | 0.5336 | IU | 0.5336 | IU | | IF |
| Vanadium | 10.7 | 20.2903 | | 20.5187 | | 1.1 | IP |
| Zinc | | 25.1569 | | 23.8719 | | 5.2 | IP |
| Cyanide | | | | | | | INR |

00032

U.S. EPA - CLP

7
LABORATORY CONTROL SAMPLE

Fac Name: KEYSTONE-MONROEVILLE

Contract: 6B-W8-0025

Lab Code: KEYPA

Case No.: 12095

SAS No.:

SDG No.: MEEZ01

Solid LCS Source: EMSL-LV

Aqueous LCS Source: EMSL-LV

| Analyte | Aqueous (ug/L) | | | Solid (mg/kg) | | | | |
|-----------|----------------|-------|----|---------------|----------|---|----------|----------|
| | True | Found | %R | True | Found | C | limits | %R |
| Aluminum | | | | 325.0 | 308.9 | | 225.0 | 424.0 |
| Antimony | | | | 211.0 | 200.4 | | 127.0 | 294.0 |
| Arsenic | | | | 917.0 | 976.0 | | 635.0 | 1199.0 |
| Barium | | | | 4.8 | 5.4 | | 0.0 | 40.0 |
| Beryllium | | | | 19.4 | 20.8 | | 16.5 | 22.3 |
| Cadmium | | | | 45.4 | 50.8 | | 35.7 | 55.1 |
| Calcium | | | | | | | | |
| Chromium | | | | 99.6 | 113.7 | | 79.2 | 120.0 |
| Chloride | | | | 144.0 | 141.1 | | 125.0 | 162.0 |
| Copper | | | | 6910.0 | 7683.4 | | 6006.0 | 7820.0 |
| Iron | | | | 22430.0 | 17836.8 | | 17770.0 | 27080.0 |
| Lead | | | | 236.0 | 213.2 | | 188.0 | 287.0 |
| Magnesium | | | | 118100.0 | 242356.0 | | 100400.0 | 125300.0 |
| Manganese | | | | 208.0 | 230.0 | | 177.0 | 234.0 |
| Mercury | | | | 12.7 | 13.2 | | 8.5 | 17.0 |
| Nickel | | | | 60.9 | 53.7 | | 49.2 | 72.6 |
| Potassium | | | | 50.0 | 251.9 | | 0.0 | 1000.0 |
| Selenium | | | | 39.2 | 34.4 | | 19.1 | 59.4 |
| Silver | | | | 22.2 | 19.0 | | 15.5 | 29.0 |
| Sodium | | | | 50.0 | 65.0 | | 0.0 | 1000.0 |
| Thallium | | | | 39.0 | 42.7 | | 24.6 | 53.5 |
| Vanadium | | | | 65.8 | 72.0 | | 51.7 | 79.9 |
| Zinc | | | | 187.0 | 148.8 | | 138.0 | 236.0 |
| Cyanide | | | | | | | | |



UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 5
CHICAGO, ILLINOIS

RECEIVED

NOV 20 1989

MPCA, HAZARDOUS
WASTE DIVISION

DATE: NOV 15 1989

SUBJECT: Review of Region 5 data for WCI - FREEZER

FROM: Curtis Ross, Director *CR*

Region 5 Central Regional Laboratory

To: Data User:

Attached are the results for:

Groundwater

CRL Data Set Numbers: RCRA 6508 CASE 12619

Sample Numbers: 89KG03S01-S05

Parameter(s): Total Metals (5)

Laboratory: Skinner & Sherman

Results Status:

- DATA ACCEPTABLE FOR USE*
 DATA QUALIFIED AS TO USE
 DATA UNACCEPTABLE FOR USE

* For data acceptability requirements, refer to the method capability statement for the methods referenced.

Comments by the Quality Control Coordinator:

If there are any questions regarding the data, refer them to David Payne,
the Quality Control Coordinator, at 3-3805

Please sign and date this form below and return it with any comments to:

Sylvia Griffin
Data Management Coordinator
Region 5 Central Regional Laboratory
(5SCRL)

TRANSMITTED BY

NOV 15 1989

U.S. EPA CENTRAL
REGIONAL LAB

RECEIVED BY/DATE:

Comments:

TMA
Thermo Analytical Inc.

Skinner & Sherman Laboratories Inc.
300 Second Avenue
Post Office Box 521
Waltham, MA 02254-0521
(617) 890-7200

RECEIVED

SEP 14 1989

US EPA CENTRAL REGIONAL LAB.
536 S. CLARK ST.
CHICAGO, ILLINOIS 60605

Federal Express #4981382523

13 September 1989

USEPA Contract Laboratory Program (CLP)
Sample Management Office (SMO)
300 North Lee Street, Suite 200
Alexandria, VA 22313

Attention: Linda Boynton

Dear Ms. Boynton:

Enclosed is the Sample Data Package for the Inorganic Analyses of Case #12619, SDG #MEAX01. The samples were analyzed under Skinner and Sherman Work Order #8908188.

Please feel free to call if there are any questions concerning the enclosed.

Sincerely,

SKINNER AND SHERMAN LABORATORIES, INC.


Richard Purdy
Contract Laboratory Program
Program Manager

RP/cd

Encl.

cc: Data Audit Staff, EMSL-LV, Federal #4981382534
Curtis Ross, USEPA Region V, Federal #4981382545

U. S. EPA - GLB
COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Name: SKINNER & SHERMAN LABS. Contract: 62-09-0061
Lab Code: SKINER Case No.: 12619 SAF No.: 609-Acc. No.: 75A-01
Add. No.: 7738

| EPA Sample No. | Lab Sample ID |
|----------------|---------------|
| MEAX01 | 08188-016 |
| MEAX02 | 08188-028 |
| MEAX03 | 08188-0252 |
| MEAX04 | 08188-0288 |
| MEAX05 | 08188-036 |
| MEAX06 | 08188-046 |
| MEAX07 | 08188-058 |

Were ICP interelement corrections applied? Yes/No YES
Were ICP background corrections applied? Yes/No YES
If yes-were raw data generated before application of background corrections? Yes/No NO

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

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Blwppq
of 15/89

Name:

Tinties

Richard Perry

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Rev. 5/20

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1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MEAX01

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D9-0081

Lab Code: SKINER Case No.: 12619 SAS No.: SDG No.: MEAX01

Matrix (soil/water): WATER Lab Sample ID: 08188-01S

Level (low/med): LOW Date Received: 08/24/89

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): ug/L

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|---|---|----|
| 7429-90-5 | Aluminum | 29.00 | U | | P |
| 7440-36-0 | Antimony | 17.00 | U | | P |
| 7440-38-2 | Arsenic | 2.00 | U | | F |
| 7440-39-3 | Barium | 65.70 | B | | P |
| 7440-41-7 | Beryllium | 1.00 | U | | P |
| 7440-41-7 | Cadmium | → 4.00 | U | | P |
| 7440-70-2 | Calcium | 120000.00 | E | | P |
| 7440-47-3 | Chromium | → 10.00 | U | | P |
| 7440-48-4 | Cobalt | 5.00 | U | | P |
| 7440-50-8 | Copper | 6.80 | B | | P |
| 7439-89-6 | Iron | 24.00 | U | E | P |
| 7439-92-1 | Lead | 1.00 | U | W | F |
| 7439-95-4 | Magnesium | 34600.00 | E | | P |
| 7439-96-5 | Manganese | 29.50 | E | | P |
| 7439-97-6 | Mercury | 0.20 | U | N | CV |
| 7440-02-0 | Nickel | 7.20 | B | | P |
| 7440-09-7 | Potassium | 2640.00 | B | | P |
| 7782-49-2 | Selenium | 2.00 | U | | F |
| 7440-22-4 | Silver | 8.00 | U | | P |
| 7440-23-5 | Sodium | 6640.00 | E | | P |
| 7440-28-0 | Thallium | 3.00 | U | N | F |
| 7440-62-2 | Vanadium | 6.00 | U | | P |
| 7440-66-6 | Zinc | 28.10 | | | P |
| | Cyanide | | | | NR |

Color Before: COLORLESS

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MEAX02

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D9-0081

Lab Code: SKINER Case No.: 12619 SAS No.: SDG No.: MEAX01

Matrix (soil/water): WATER Lab Sample ID: 08188-025

Level (low/med): LOW Date Received: 08/24/89

Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|---|----|----|
| 7429-90-5 | Aluminum | 29.00 | U | | P |
| 7440-36-0 | Antimony | 17.00 | U | | P |
| 7440-38-2 | Arsenic | 11.80 | | | F |
| 7440-39-3 | Barium | 62.20 | B | | P |
| 7440-41-7 | Beryllium | 1.00 | U | | P |
| 7440-41-7 | Cadmium | 4.00 | U | | P |
| 7440-70-2 | Calcium | 156000.00 | | E | P |
| 7440-47-3 | Chromium | > 10.00 | U | | P |
| 7440-48-4 | Cobalt | 5.00 | U | | P |
| 7440-50-8 | Copper | 5.00 | U | | P |
| 7439-89-6 | Iron | 4380.00 | | E | P |
| 7439-92-1 | Lead | 1.00 | U | W | F |
| 7439-95-4 | Magnesium | 33900.00 | | E | P |
| 7439-96-5 | Manganese | 1210.00 | | E | P |
| 7439-97-6 | Mercury | > 0.20 | U | N | CV |
| 7440-02-0 | Nickel | 7.00 | U | | P |
| 7440-09-7 | Potassium | 4080.00 | B | | P |
| 7782-49-2 | Selenium | 2.00 | U | W | F |
| 7440-22-4 | Silver | > 8.00 | U | | P |
| 7440-23-5 | Sodium | 36000.00 | | E | P |
| 7440-28-0 | Thallium | 3.00 | U | NW | F |
| 7440-62-2 | Vanadium | 6.00 | U | | P |
| 7440-66-6 | Zinc | 33.40 | | | P |
| | Cyanide | | | | NR |

Color Before: COLORLESS

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MEAX03

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D9-0081

Lab Code: SKINER Case No.: 12619 SAS No.: SDG No.: MEAX01

Matrix (soil/water): WATER Lab Sample ID: 08188-036

Level (low/med): LOW Date Received: 08/24/89

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|---|---|----|
| 7429-90-5 | Aluminum | 29.00 | U | | P |
| 7440-36-0 | Antimony | 17.00 | U | | P |
| 7440-38-2 | Arsenic | 8.30 | B | W | F |
| 7440-39-3 | Barium | 48.70 | B | | P |
| 7440-41-7 | Beryllium | 1.00 | U | | P |
| 7440-41-7 | Cadmium | > 4.00 | U | | P |
| 7440-70-2 | Calcium | 86900.00 | E | | P |
| 7440-47-3 | Chromium | > 10.00 | U | | P |
| 7440-48-4 | Cobalt | 5.00 | U | | P |
| 7440-50-8 | Copper | 5.00 | U | | P |
| 7439-89-6 | Iron | 28.00 | B | E | P |
| 7439-92-1 | Lead | 1.40 | B | | F |
| 7439-95-4 | Magnesium | 20100.00 | E | | P |
| 7439-96-5 | Manganese | 337.00 | E | | P |
| 7439-97-6 | Mercury | 0.20 | U | N | CV |
| 7440-02-0 | Nickel | 14.00 | B | | P |
| 7440-09-7 | Potassium | 3130.00 | B | | P |
| 7782-49-2 | Selenium | 2.00 | U | W | F |
| 7440-22-4 | Silver | 8.00 | U | | P |
| 7440-23-5 | Sodium | 41300.00 | E | | P |
| 7440-28-0 | Thallium | 3.00 | U | N | F |
| 7440-62-2 | Vanadium | 6.00 | U | | P |
| 7440-66-6 | Zinc | 28.30 | | | P |
| | Cyanide | | | | NR |

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP

1
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MEAX04

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D9-0081

Lab Code: SKINER Case No.: 12619 SAS No.: SDG No.: MEAX01

Matrix (soil/water): WATER Lab Sample ID: 08188-04S

Level (low/med): LOW Date Received: 08/24/89

Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|---|---|----|
| 7429-90-5 | Aluminum | 29.00 | U | | P |
| 7440-36-0 | Antimony | 17.00 | U | | P |
| 7440-38-2 | Arsenic | 8.60 | B | W | F |
| 7440-39-3 | Barium | 48.30 | B | | P |
| 7440-41-7 | Beryllium | 1.00 | U | | P |
| 7440-41-7 | Cadmium | > 4.00 | U | | P |
| 7440-70-2 | Calcium | 86600.00 | | E | P |
| 7440-47-3 | Chromium | > 10.00 | U | | P |
| 7440-48-4 | Cobalt | 5.00 | U | | P |
| 7440-50-8 | Copper | 5.00 | U | | P |
| 7439-89-6 | Iron | 24.00 | U | E | P |
| 7439-92-1 | Lead | > 1.00 | U | | F |
| 7439-95-4 | Magnesium | 20100.00 | | E | P |
| 7439-96-5 | Manganese | 250.00 | | E | P |
| 7439-97-6 | Mercury | 0.20 | U | N | CV |
| 7440-02-0 | Nickel | 7.00 | U | | P |
| 7440-09-7 | Potassium | 3150.00 | B | | P |
| 7782-49-2 | Selenium | 2.00 | U | W | F |
| 7440-22-4 | Silver | > 8.00 | U | | P |
| 7440-23-5 | Sodium | 41600.00 | | E | P |
| 7440-28-0 | Thallium | 3.00 | U | N | F |
| 7440-62-2 | Vanadium | 6.00 | U | | P |
| 7440-66-6 | Zinc | 20.80 | | | P |
| | Cyanide | | | | NR |

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

Duplicate of SO3

INORGANIC ANALYSIS DATA SHEET

MEAX05

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-D9-0081

Lab Code: SKINER Case No.: 12619 SAS No.: SDG No.: MEAX01

Matrix (soil/water): WATER Lab Sample ID: 02188-05S

Level (low/med): LOW Date Received: 08/24/89

% Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

| CAS No. | Analyte | Concentration | C | Q | M |
|-----------|-----------|---------------|---|---|----|
| 7429-90-5 | Aluminum | 29.00 | U | | P |
| 7440-36-0 | Antimony | 17.00 | U | | P |
| 7440-38-2 | Arsenic | 2.00 | U | | F |
| 7440-39-3 | Barium | 14.40 | B | | P |
| 7440-41-7 | Beryllium | 1.00 | U | | P |
| 7440-41-7 | Cadmium | 4.00 | U | | P |
| 7440-70-2 | Calcium | 159.00 | B | E | P |
| 7440-47-3 | Chromium | 10.00 | U | | P |
| 7440-48-4 | Cobalt | 5.00 | U | | P |
| 7440-50-8 | Copper | 5.00 | U | | P |
| 7439-89-6 | Iron | 24.00 | U | E | P |
| 7439-92-1 | Lead | 1.00 | U | | F |
| 7439-95-4 | Magnesium | 57.30 | B | E | P |
| 7439-96-5 | Manganese | 3.00 | U | E | P |
| 7439-97-6 | Mercury | 0.20 | U | N | CV |
| 7440-02-0 | Nickel | 7.00 | U | | P |
| 7440-09-7 | Potassium | 179.00 | U | | P |
| 7782-49-2 | Selenium | 2.00 | U | | F |
| 7440-22-4 | Silver | 8.00 | U | | P |
| 7440-23-5 | Sodium | 162.00 | B | E | P |
| 7440-28-0 | Thallium | 3.00 | U | N | F |
| 7440-62-2 | Vanadium | 6.00 | U | | P |
| 7440-66-6 | Zinc | 12.10 | B | | P |
| | Cyanide | | | | NR |

Color Before: COLORLESS

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

Blank

U.S. EPA - CLP

3
BLANKS

Lab Name: SKINNER & SHERMAN LABS.

Contract: 78-09-0021

Lab Code: SKINNER

Case No.: 12619

EAS No.:
SOG No.: MEA/Q1

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

| Analyst | Initial Calib. Blank (ug/L) | Continuing Calibration Blank (ug/L) | | | Prepa- ration Blank (ug/L) | C (%M) |
|-----------|--------------------------------------|----------------------------------------|---------|---------|-------------------------------------|--------|
| | | 1 | C | 2 | | |
| Aluminum | -33.61B | 29.01U | 29.01U | 29.01U | 29.01U | P |
| Antimony | 17.01U | 17.01U | 17.01U | 17.01U | 17.01U | P |
| Arsenic | 2.01U | 2.01U | 2.01U | 2.01U | 2.01U | F |
| Barium | 3.01U | 3.01U | 3.01U | 3.01U | 3.01U | F |
| Boron | 1.01U | 1.01U | -1.11B | 1.01U | 1.01U | P |
| Cadmium | 4.01U | 4.01U | 4.01U | 4.01U | 4.01U | P |
| Calcium | 51.01U | 51.01U | 51.01U | 51.01U | 51.01U | F |
| Chromium | 10.01U | 10.01U | 10.01U | 10.01U | 10.01U | F |
| Cobalt | 5.01U | 5.01U | 5.01U | 5.01U | 5.01U | P |
| Copper | -11.01B | -5.51B | 5.01U | -5.01U | 5.01U | F |
| Iron | 24.01U | 24.01U | 24.01U | 24.01U | 24.01U | F |
| Lead | 1.01U | 1.01U | 1.01U | 1.01U | 1.01U | F |
| Magnesium | 40.01U | 40.01U | 40.01U | 57.31B | 47.71B | P |
| Manganese | 3.01U | -5.21B | -5.21B | -5.61B | -4.51B | P |
| Mercury | 0.21U | 0.21U | 0.21U | 0.21U | 0.21U | CV |
| Nickel | 7.01U | 7.01U | 7.01U | 7.01U | 7.01U | F |
| Potassium | 179.01U | 179.01U | 179.01U | 179.01U | 179.01U | F |
| Selenium | 2.01U | 2.01U | 2.01U | 2.01U | 2.01U | F |
| Silver | 8.01U | 8.01U | 8.01U | 8.01U | 8.01U | P |
| Sodium | 74.01U | 74.01U | 74.01U | 74.01U | 74.01U | F |
| Tellurium | 3.01U | 3.01U | 3.01U | 3.01U | 3.01U | F |
| Vanadium | 6.01U | 6.01U | 6.01U | 6.01U | 6.01U | P |
| Zinc | 6.01U | 6.01U | 6.01U | 6.01U | 12.51B | F |
| Spanide | | | | | | NR |

0012

U.S. EPA - CLP

3
BLANKS

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-09-0081
 Lab Code: SKINNER Case No.: 12612 SAG No.: SDS No.: MEA401
 Preparation Blank Matrix (soil/water):
 Preparation Blank Concentration Units (ug/L or mg/kg):

| Analyze | Initial Concen. Blank (ug/L) | Continuous Calibration Blank (ug/L) | | | | | | Prepa- ration Blank (ug/L) | C M |
|-----------|---------------------------------------|----------------------------------------|--------|--------|---|---|---|-------------------------------------|--------|
| | | 1 | 0 | 2 | 0 | 3 | 0 | | |
| Aluminum | | 29.0101 | | | | | | | P |
| Antimony | | 17.0101 | | | | | | | P |
| Arsenic | 2.0101 | 2.0101 | 2.0101 | | | | | | F |
| rium | | 3.0101 | | | | | | | P |
| Beryllium | | 1.0101 | | | | | | | P |
| Cadmium | | 4.0101 | | | | | | | P |
| Calcium | | 51.0101 | | | | | | | P |
| Chromium | | 10.0101 | | | | | | | P |
| Cobalt | | 5.0101 | | | | | | | P |
| Copper | | -6.5161 | | | | | | | P |
| Iron | | 24.0101 | | | | | | | P |
| Led | 1.0101 | 1.0101 | 1.0101 | | | | | | P |
| Magnesium | | 40.0101 | | | | | | | P |
| Manganese | | -5.2181 | | | | | | | P |
| Mercury | | | | | | | | | NR |
| Nickel | | 7.0101 | | | | | | | P |
| Potassium | | 179.0101 | | | | | | | P |
| Selenium | 2.0101 | 2.0101 | 2.0101 | 2.0101 | | | | | P |
| Silver | | 8.0101 | | | | | | | P |
| Sodium | | 74.0101 | | | | | | | P |
| Thallium | 3.0101 | 3.0101 | 3.0101 | | | | | | F |
| Vanadium | | 6.0101 | | | | | | | F |
| Zinc | | 6.0101 | | | | | | | P |
| Cyanide | | | | | | | | | NR |

0013

U. S. EPA - CLP

SA
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO

Lab Name: SKINNER & SHERMAN LABS. Contract: 68-014-0081 MEAX006

Lab Code: SKINER Case No.: 12619 SAS No.: SOG No.: MEAX01

Matrix: WATER Level (low/med): LOW

Solids for Sample: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

| Analyte | Control | | Sample | | Spike | | %R | Q | M |
|-----------|---------|-----------|----------------------------|---|--------------|---|------------|-------|---------|
| | Limit | %R | Spiked Sample Result (SSR) | C | Result (SR) | C | Added (SA) | | |
| Aluminum | 75-125 | 2045.2000 | | | 29.0000(U) | | 2000.00 | 102.3 | (P) |
| Antimony | 75-125 | 439.0600 | | | 17.0000(U) | | 500.00 | 97.8 | (P) |
| Arsenic | 75-125 | 58.7900 | | | 11.2350(U) | | 40.00 | 117.4 | (F) |
| Barium | 75-125 | 2060.1000 | | | 62.2200(E) | | 2000.00 | 99.9 | (P) |
| Beryllium | 75-125 | 45.8000 | | | 1.0000(U) | | 50.00 | 91.6 | (P) |
| Bismuth | 75-125 | 47.7700 | | | 4.0000(U) | | 50.00 | 95.5 | (P) |
| Calcium | | | | | | | | | (NR) |
| Chromium | 75-125 | 201.8200 | | | 10.0000(U) | | 200.00 | 100.9 | (F) |
| Cobalt | 75-125 | 478.3400 | | | 5.0000(U) | | 500.00 | 95.7 | (P) |
| Cooper | 75-125 | 230.2700 | | | 5.0000(U) | | 250.00 | 92.1 | (P) |
| Iron | | 5455.4000 | | | 4382.5000(U) | | 1000.00 | 107.3 | (P) |
| Lead | 75-125 | 20.3500 | | | 1.0000(U) | | 20.00 | 101.2 | (F) |
| Magnesium | | | | | | | | | (NR) |
| Manganese | 75-125 | 1672.6000 | | | 1210.8000(U) | | 500.00 | 92.4 | (P) |
| Mercury | 75-125 | 1.2700 | | | 0.2000(U) | | 1.00 | 127.0 | (N)(CV) |
| Nickel | 75-125 | 465.6900 | | | 7.0000(U) | | 500.00 | 93.1 | (P) |
| Potassium | | | | | | | | | (NR) |
| Selenium | 75-125 | 9.8550 | | | 2.0000(U) | | 10.00 | 98.6 | (F) |
| Silver | 75-125 | 57.5200 | | | 8.0000(U) | | 50.00 | 115.0 | (P) |
| Sodium | | | | | | | | | (NR) |
| Thallium | 75-125 | 33.2850 | | | 3.0000(U) | | 50.00 | 66.6 | (N)(F) |
| Vanadium | 75-125 | 483.9700 | | | 6.0000(U) | | 500.00 | 96.3 | (P) |
| Zinc | 75-125 | 483.2000 | | | 33.3800(U) | | 500.00 | 90.0 | (P) |
| Cyanide | | | | | | | | | (NR) |

Comments:

0015

58
POST DIGEST SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name: SKINNER & SHERMAN LABS. Contract: 52-09-0081 MEAK01A

Lab Code: SKINNER Case No.: 12619 SAB No.: SDG No.: MEAK01

Matrix: WATER Level (low/med): LOW

Concentration Units: ug/L

| Analyte | Control | | Sample | | Spike | | %R | CV (%) | MI |
|-----------|---------|---------------|----------------|---------------|--------------|----|----|--------|-----|
| | Limit | Spiked Sample | C Result (S&P) | C Result (SR) | C Added (SA) | %R | | | |
| Aluminum | | | | | | | | | NRI |
| Antimony | | | | | | | | | NRI |
| Arsenic | | | | | | | | | NRI |
| Barium | | | | | | | | | NRI |
| Beryllium | | | | | | | | | NRI |
| Cadmium | | | | | | | | | NRI |
| Calcium | | | | | | | | | NRI |
| Chromium | | | | | | | | | NRI |
| Cobalt | | | | | | | | | NRI |
| Copper | | | | | | | | | NRI |
| Iron | | | | | | | | | NRI |
| Lead | | | | | | | | | NRI |
| Magnesium | | | | | | | | | NRI |
| Manganese | | | | | | | | | NRI |
| Mercury | | | | | | | | | NRI |
| Nickel | | | | | | | | | NRI |
| Potassium | | | | | | | | | NRI |
| Selenium | | | | | | | | | NRI |
| Silver | | | | | | | | | NRI |
| Sodium | | | | | | | | | NRI |
| Thallium | | | | | | | | | NRI |
| Vanadium | | | | | | | | | NRI |
| Zinc | | | | | | | | | NRI |
| Cyanide | | | | | | | | | NRI |

Comments:

U.S. EPA - CLP

DUPLICATES

EPA SAMPLE NO.

MEAX002

Lab Name: SKINNER & SHERMAN LABS. Contract: 66-09-0091

Lab Code: SKINER Case No.: 12619 SAS No.: SDS No.: MEAX01

Matrix (solid/water): WATER Level (low/med): LOW

% Solids for Sample: 0.0 % Solids for Duplicate: 0.0

Concentration Units (ug/L or mg/kg dry weight): ug/L

| Analyte | Control Limit | Sample (S) C | Duplicate (D) C | RFD | (C) M |
|-----------|---------------|----------------|-----------------|-------|-------|
| Aluminum | | 29.0000(U) | 29.0000(U) | | (P) |
| Antimony | | 17.0000(U) | 17.0000(U) | | (P) |
| Arsenic | 12.0 | 11.2350(U) | 14.0500(U) | 17.1 | (F) |
| Barium | | 62.2200(B) | 64.8300(B) | 4.1 | (P) |
| Beryllium | | 1.0000(U) | 1.0000(U) | | (P) |
| Cadmium | | 4.0000(U) | 4.0000(U) | | (F) |
| Calcium | | 155880.0000(L) | 159260.0000(L) | 2.1 | (P) |
| Chromium | | 10.0000(U) | 10.0000(U) | | (P) |
| Cobalt | | 5.0000(U) | 5.5700(B) | 200.0 | (P) |
| Copper | | 5.0000(U) | 5.0000(U) | | (P) |
| Iron | | 4382.5000(L) | 4568.4000(L) | 4.2 | (F) |
| Lead | | 1.0000(U) | 1.0000(U) | | (F) |
| Magnesium | | 33858.0000(L) | 34803.0000(L) | 2.8 | (P) |
| Manganese | | 1210.8000(L) | 1232.3000(L) | 1.8 | (P) |
| Mercury | | 0.2000(U) | 0.2000(U) | | (CV) |
| Nickel | | 7.0000(U) | 7.0000(U) | | (P) |
| Potassium | | 4076.5000(B) | 4391.0000(B) | 7.4 | (P) |
| Selenium | | 2.0000(U) | 1.1207(U) | | (F) |
| Silver | | 8.0000(U) | 8.0000(U) | | (P) |
| Sodium | | 35955.0000(L) | 37921.0000(L) | 5.3 | (P) |
| Thallium | | 3.0000(U) | 3.0000(U) | | (F) |
| Vanadium | | 6.0000(U) | 6.0000(U) | | (P) |
| Zinc | 20.0 | 33.3800(L) | 21.2800(L) | 44.3 | (P) |
| Cyanide | | | | | (NP) |

0017

7
LABORATORY CONTROL SAMPLE

Lab Name: SKINNER & SHERMAN LABS.

Contract: 63-09-0081

Lab Order: SKINNER

Case No.: 12614

SAS No.:

SDG No.: MEAN01

Solid LOS Source:

Aqueous LOS Source: SKINNER

| Analyte | Aqueous (ug/L) | | | Solid (mg/kg) | | | Limits | %P |
|-----------|----------------|----------|-------|---------------|-------|---|--------|----|
| | True | Found | %R | True | Found | C | | |
| Aluminum | 10000.0 | 9680.30 | 96.8 | | | | | |
| Antimony | 1000.0 | 957.20 | 95.6 | | | | | |
| Arsenic | 50.0 | 48.82 | 97.6 | | | | | |
| Barium | 1000.0 | 1015.70 | 101.6 | | | | | |
| Beryllium | 1000.0 | 974.91 | 97.5 | | | | | |
| Cadmium | 1000.0 | 998.92 | 99.9 | | | | | |
| Lead | 10000.0 | 10304.00 | 103.0 | | | | | |
| Chromium | 1000.0 | 1013.20 | 101.3 | | | | | |
| Cobalt | 1000.0 | 993.32 | 99.3 | | | | | |
| Copper | 1000.0 | 967.74 | 96.8 | | | | | |
| Iron | 1000.0 | 1038.00 | 103.8 | | | | | |
| Lead | 50.0 | 56.36 | 112.7 | | | | | |
| Magnesium | 10000.0 | 10052.00 | 100.5 | | | | | |
| Manganese | 1000.0 | 982.06 | 98.2 | | | | | |
| Mercury | | | | | | | | |
| Nickel | 10000.0 | 9766.90 | 97.7 | | | | | |
| Potassium | 10000.0 | 9977.40 | 99.8 | | | | | |
| Selenium | 50.0 | 42.66 | 85.3 | | | | | |
| Silver | 3000.0 | 2869.70 | 95.7 | | | | | |
| Sodium | 10000.0 | 10086.00 | 100.9 | | | | | |
| Thallium | 50.0 | 55.30 | 110.6 | | | | | |
| Titanium | 1000.0 | 1004.70 | 100.5 | | | | | |
| Zinc | 1000.0 | 965.90 | 96.6 | | | | | |
| Oxamide | | | | | | | | |

0018

Appendix 4
WCI Data Comparison

| <u>Sample Location</u> | <u>Analyte</u> | <u>PACE MDL (mg/kg)</u> | <u>PACE Concentration</u> | <u>USEPA MDL (mg/kg)</u> | <u>USEPA Concentration</u> |
|------------------------|------------------------------------------------------------------|-------------------------|---------------------------|--------------------------|----------------------------|
| B-1, 19-20' | Methylene Chloride | 1.2 | ND | Unknown | 85 B |
| | Acetone | 1.2 | ND | Unknown | 54 B |
| | 2-Butanone | 1.2 | ND | Unknown | 12 |
| (1) B-2, 9-10%' | Methylene Chloride | 1.2 | ND | Unknown | 47 B |
| | Acetone | 1.2 | ND | Unknown | 12 B |
| (1) B-2, 19-20%' | Methylene Chloride | 1.2 | ND | Unknown | 44 B |
| | Acetone | 1.2 | ND | Unknown | 9 BJ |
| (2) B-3, 24-25%' | Methylene Chloride | 1.2 | ND | Unknown | 61 B |
| | Acetone | 1.2 | ND | Unknown | 22 B |
| (3) B-4, 0-1%' | Methylene Chloride | 1.2 | ND | Unknown | 45 B |
| | Acetone | 1.2 | ND | Unknown | 13 B |
| (3) B-4, 1%-3' | Methylene Chloride | 1.2 | ND | Unknown | 36 B |
| | Acetone | 1.2 | ND | Unknown | 12 B |
| (4) B-5, 1%-3' | Methylene Chloride | 1.2 | ND | Unknown | 30 B |
| | Acetone | 1.2 | ND | Unknown | 8 BJ |
| MW-1 | Methylene Chloride | 10 ug/l | ND | Unknown | 6 ⁽⁵⁾ ug/l |
| MW-2 | (both laboratories reported nondetectable for volatile organics) | | | | |
| MW-3 | (both laboratories reported nondetectable for volatile organics) | | | | |

- 1) PACE designation; MPCA designation is B-4
- 2) PACE designation; MPCA designation is B-5
- 3) PACE designation; MPCA designation is B-2
- 4) PACE designation; MPCA designation is B-3
- 5) Identified as laboratory contamination

ENVIRONMENTAL PROTECTION AGENCY
TECHNICAL ENFORCEMENT SUPPORT
AT HAZARDOUS WASTE SITES

RCRA FACILITY ASSESSMENT SAMPLING VISIT REPORT
WCI FREEZER (WCI),
ST. CLOUD, MINNESOTA
EPA REGION V

JACOBS ENGINEERING GROUP, INC.
PROJECT NO. 05B-954-00

REPORT PREPARED BY:
METCALF & EDDY, INC.
85 WEST ALGONQUIN ROAD, SUITE 500
ARLINGTON HEIGHTS, ILLINOIS 60005

September 1989

R E C E I V E D
SEP 20 1989
OFFICE OF RCRA
WASTE MANAGEMENT DIVISION
EPA, REGION V

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SECTION 1

INTRODUCTION

Metcalf & Eddy, Incorporated (M&E) was issued a work assignment (WA #R05022) under the Technical Enforcement Support (TES) IV contract (EPA #68-01-7351) to perform RCRA Facility Assessment (RFA) sampling at the WCI Freezer (WCI) Facility in St. Cloud, Minnesota (U.S. EPA ID number MND 092304856). Due to the nature of the material stored on site, this work assignment was issued to identify if hazardous waste constituents were released into the environment. To accomplish this task, the scope of work included sampling of monitoring wells installed around various solid waste management units (SWMUs). These groundwater samples will help determine whether toxic metals, xylene, toluene, or methyl ethyl ketone - the contaminants that potentially exist at this site - have migrated to the groundwater.

On August 8, 1989, M&E representative Ken Krueger collected a total of 5 groundwater samples at the WCI Freezer (WCI) Facility in St. Cloud, Minesota. Also present was WCI representative Dick Klute, Pace Laboratories' representative Terry Borgerding, and Minnesota Pollution Control Agency (MPCA) representative Joe Jewelick.

SECTION 2

SITE CONDITIONS

The WCI Freezer Facility, a division of Franklin Manufacturing Company, is located in St. Cloud, Minnesota. The facility manufactures freezers.

In 1980, a RCRA Part A notification as a hazardous waste facility was submitted and retracted the same year by the owner/operator. The MPCA determined the facility was a hazardous waste storage facility and granted interim status. Currently, there exist active and inactive units on site.

The empty drum storage area is a solid waste management unit (SWMU) where empty drums were stored over an unpaved soil area. Overturned 55-gallon drums and leaking, rusted containers may have released hazardous constituents. The former wastewater lagoon was operated from 1965-1979. This lagoon accepted waste bonderite, a "soapy" degreasing material, and chromium-containing washwater from paint spray booths. The lagoon was closed in 1979.

One monitoring well was installed around each of the aforementioned units. The third well (upgradient) was constructed in an open field on the SW corner of the site. The wells were installed to determine whether hazardous constituents have been released to the groundwater.

During the sampling visit, temperatures were in the mid-to-high 80's, with clear skies and light to moderate east winds.

SECTION 3

SUMMARY OF SAMPLING VISIT

3.1 Summary of Samples Collected

Sampling activities at the WCI site commenced at 0930 on August 23, 1989. A total of 5 groundwater samples were collected, consistent with the amount specified in the EPA sampling plan. None of the groundwater samples collected exhibited unusual odor or discoloration, however, they were quite silty, especially S01 and S03. Analysis requested for all samples was volatile organic analysis and total metals.

All sample bottles and labels were provided by the U.S. EPA Contract Laboratory Program (CLP) as well as all paperwork used, including tags, traffic reports, and chain of custody forms. Latex disposable gloves were used and deemed to be non-hazardous and were disposed of off-site in plastic garbage bags, along with some nalgene filters and other paper products.

Prior to sample collection, water levels were measured and the volume of water in each well was calculated. Three times this volume was removed from each well and placed in 55-gallon drums. Three water samples, S01, S02, and S03, came from monitoring wells one, two, and three, respectively. Sample S04 was a duplicate of S03 and sample S05 was a field blank. For a more detailed explanation of actual sampling locations, see Figure 1.

Sampling was conducted with dedicated bailers by Terry Borgering from Pace Laboratories. He then split the samples with M&E representative Ken Krueger.

Metal samples for S01 and S02 were filtered by Mr. Borgering with a master flex pump. Mr. Borgering filter did not operate properly after he filtered his sample from S03. Consequently Ken Krueger used M&E's Nalgene filter for samples S03 and S04.

3.2 Conclusions

The sampling visit was completed at 1330 hours. The samples were carefully packed in a total of two coolers. All appropriate CLP documentation was enclosed, and custody seals placed on the outside. The coolers were shipped via Federal Express on August 23, 1989 at approximately 1700 hours. The SMO was notified the next day. The organics (one cooler) were shipped

to Gulf South in New Orleans, LA (Attn: Cindy Palazzo) and the inorganics (one cooler) to Skinner and Sherman, Inc. in Waltham, MA (Attn: Marilyn Fonseca).

LIST OF FIGURES

FIGURE 1

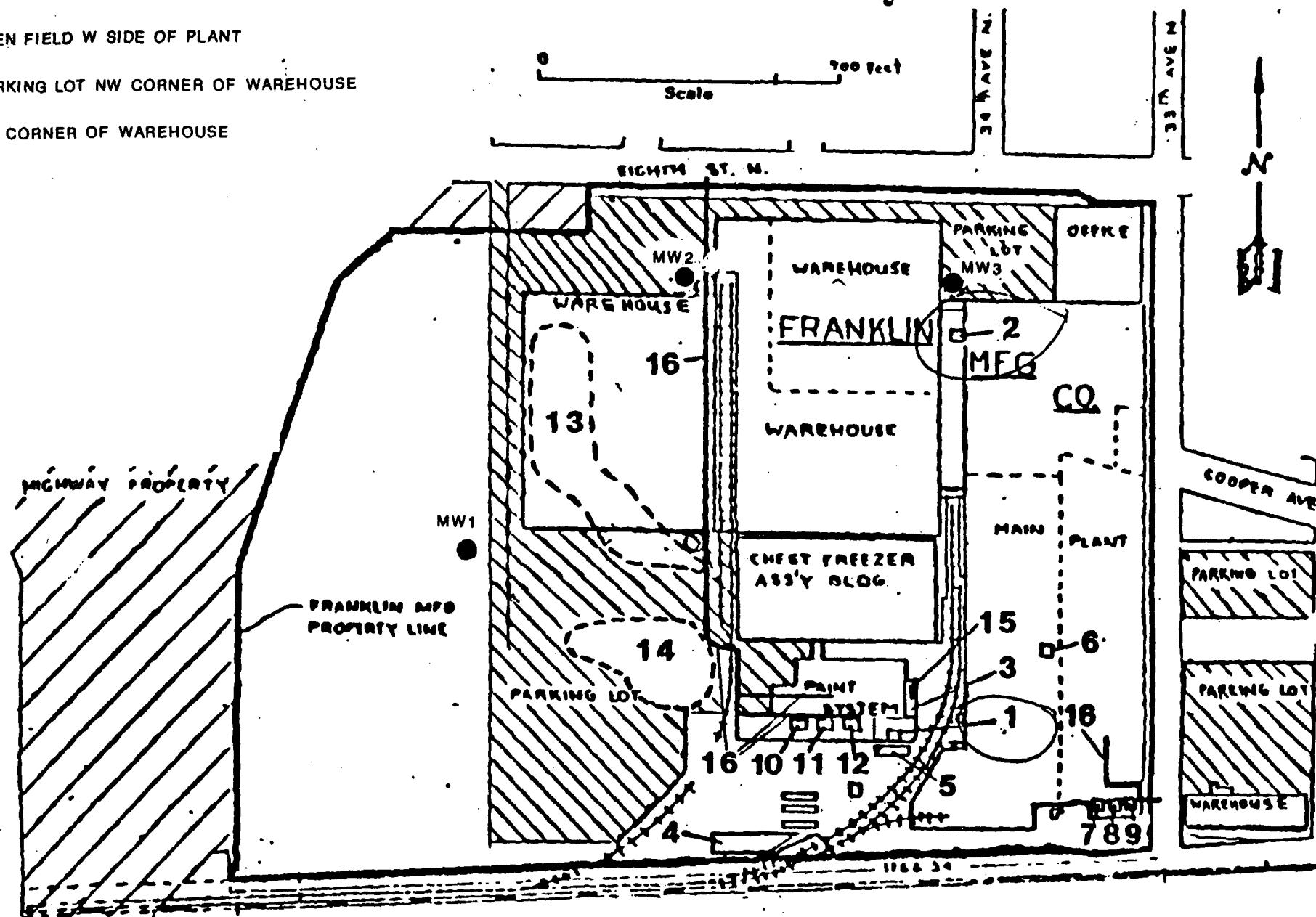
SAMPLE LOCATION MAP

SAMPLE LOCATIONS

SO1,MW1 - OPEN FIELD W SIDE OF PLANT

SO2,MW2 - PARKING LOT NW CORNER OF WAREHOUSE

SO3,MW3 - NE CORNER OF WAREHOUSE



MONITORING WELL LOCATIONS FIGURE 1

APPENDIX A

**ENVIRONMENTAL PROTECTION AGENCY
TECHNICAL ENFORCEMENT SUPPORT
AT HAZARDOUS WASTE SITES**

**TES IV
CONTRACT NO. 68-01-7351
WORK ASSIGNMENT NO. R05022**

**SAMPLING PLAN
FOR
WCI FREEZER (WCI)
ST. CLOUD, MINNESOTA**

**ENFORCEMENT SUPPORT
EPA REGION V**

**JACOBS ENGINEERING GROUP, INC.
METCALF & EDDY, INC.
PROJECT NO. 05B-954-00**

AUGUST 1989

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WCI FREEZER

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SITE HEALTH AND SAFETY PLAN

1.0 INTRODUCTION

WCI Freezer in St. Cloud, Minnesota has two solid waste management units that require further investigation to determine whether releases of hazardous constituents have contaminated soil or groundwater. These two areas are the empty container storage area south of the paint building and the former wastewater lagoon on the west side of the WCI property.

Soil samples were already collected at both of these units by the MPCA, however, groundwater samples will still need to be collected from monitoring wells that were installed around the wastewater lagoon. These groundwater samples will help determine the presence of toxic metals, xylene, toluene and methyl ethyl ketone which are the main contaminants that potentially exist at this site. These wells intersect the water table.

2.0 SAMPLING PROCEDURES AND EQUIPMENT

2.1 Introduction

Sampling activities will be conducted at the WCI Freezer facility on August 23, 1989. Access to the facility will be provided by the U.S. EPA Primary contact Allen Debus. The U.S. EPA contractor will split three groundwater samples with representatives from WCI Freezer.

2.2 Sample Containers and Equipment

The sample quantities, preservatives, holding times, bottle sizes and types to be used are those designated in the CLP SOP for routine analytical services (EPA 1986, 1987 b,c) and are shown in Table 1. A breakdown of the number of sample containers to be used during the SV is given in Table 2.

Representatives from WCI Freezer will bail the wells, provide their own containers, and split the water samples with the U.S. EPA contractor. The U.S. EPA contractor will provide their own sample containers.

Sampling equipment and supplies to be used on site are listed in Table 3. Sampling methods and equipment are described below.

2.3 Groundwater Samples

A total of 3 groundwater samples will be taken by WCI Freezer contractors from monitoring wells at WCI Freezer. Two of the wells are downgradient and the third is upgradient from the lagoon. All wells are equipped with dedicated bailers. Total depth and depth to water level will be measured with a decontaminated weighted measuring tape to evaluate the static volume of water in the well. Three volumes of water will be purged using the dedicated bailer. Purged water will be deposited in the facilities wastewater treatment plant or in areas with similar constituents. Groundwater will be sampled by pouring directly from the bailer into sample containers with a minimum of agitation. Metal samples will be filtered into the sample containers and immediately preserved with nitric acid to a pH less than 2. If well recovery is extremely slow, wells maybe purged until dry and sampled immediately upon recovery. Each sample will be labeled with EPA sample tags, sealed, placed in a plastic bag, and packed on ice in a cooler. Any non-dedicated sampling equipment will be decontaminated before sampling and between sampling locations.

3.0 FIELD AND LAB QA/QC

3.1 Decontamination of Equipment

Metcalf and Eddy will not be doing any de-contamination of equipment if the companies contractor will be providing the sampling equipment and will be deconning themselves. However if the need arises the following procedure will be adhered to: All non-dedicated sampling equipment to be used on-site will be decontaminated prior to sampling and between each sampling location. Teflon bailers will first be scrubbed and washed in an alconox solution. Bailers will then be rinsed with tap water followed by de-ionized water. Iso-propanol will then be used as a final decon rinse. All equipment brought by M & E will be cleaned and wrapped in aluminum foil before and after the job. Wash and rinse water will be collected in a catch basin and disposed on-site. If possible disposable clothing and equipment will also be disposed of on-site. If these arrangements are not suitable with the facility, the disposable materials will be bagged, taken off-site, and disposed of properly.

Equipment blanks will be collected from water sampling equipment to determine the adequacy of the decontamination procedures. Rinsate samples, using distilled water, will be analyzed for volatiles, and priority pollutant metals. The procedure for collection and handling of these samples is identical to the procedure for all other samples collected on-site.

3.2 Lab QA/QC

3.3 Record Keeping

Each sample will have a unique control number assigned from Jacobs Engineering sample number control log. The numbers used for this sampling visit are yet to be determined. The location from which each sample is taken will be recorded with indelible ink in the field notebook along with the sample number, date, and time. Photographs and photographic log forms will be used to document sampling locations and to verify the written description entered in the field logbook. All routine measurements and observations will be recorded in the field logbook, including water depths, descriptions, photoionization detector readings, and pertinent colors or odors. Any problems or deviations from the sampling plan encountered during the course of sampling activities will also be noted in the logbook. At the end of each day the logbook will be dated and signed by the author. A record of equipment calibration will be kept in dedicated equipment calibration log books. Metcalf & Eddy SOP for field documentation will be followed.

Field tracking records, sample data report sheets, organic traffic reports and chain of custody forms will be prepared as described in the RCRA RFA QAPP (EPA 1987a). The EPA chain of custody form contained in appendix D of the RCRA RFA QAPP (EPA 1987a) will be used along with EPA sample container labels and chain of custody seals. All photographs, data forms, and other project documentation will be submitted to Pat Vogtman, EPA Region V. A copy of the chain of custody form completed for shipping will be supplied to the facility as a receipt for samples if requested.

4.0 SAMPLE HANDLING

4.1 Sample Packaging and Shipping

All sample Packaging and Shipping

All samples shipped will be low hazard environmental samples and will be analyzed as regular analytical services. All samples will be tagged with EPA sample tags and labels. All sample bottles will be securely taped shut, individually sealed in plastic bags, and placed on ice (4°C) in a cooler. Empty space in the cooler will be filled with vermiculite to prevent breakage during shipment. The original and yellow copies of the chain of custody documents and the white and yellow copies of the traffic report forms will be placed in a plastic bag, sealed, and taped to the inside lid of the cooler. The cooler will then be taped closed and sealed with chain of custody seals

All samples will be shipped to the laboratory via Federal Express for overnight delivery. The samples will be shipped on the same day as collection. The address for the Federal Express office that will be used is:

Federal Express - Saint Cloud
1801 8th Street S
Saint Cloud, MN 56301
(800) 238-5355

Upon shipment of the samples the SMO contact, Jeb Livingood, and the EPA Sample Contract Coordinator, Judy Kleiman, will be notified of the following information:

- Case and/or SAS number
- Data shipped
- Number of sample to each lab by concentration and Matrix
- Carrier and airbill numbers

Information for Saturday must be phoned in by 3:00 pm (EST) the preceding Friday. The original copies of the traffic reports will be sent to the SMO contact and the sample data reports will be sent to the EPA sample control coordinator within 5 days of shipment of the samples. Addresses and telephone numbers for these contacts are:

Jeb Livingood
CLP-SMO
P.O. Box 818
Alexandria, VA 22314
(703) 557-2490

Judy Kleiman
U.S. EPA Region V, CRL
536 S. Clark Street
10th Floor
Chicago, IL 60605
(312) 886-1482

4.2 Contract Lab Program (CLP)

Two CLP labs will be used to analyze the groundwater samples at WCI Freezer. The identification of these labs still needs to be determined.

The laboratory data will be validated by the EPA Region V Central Regional Laboratory according to Section 14 and Appendix D of the RCRA RFA QAPP (EPA 1987a).

4.3 Chain of Custody

Chain of custody procedures will follow those in Section 7 of the RCRA RFA QAPJP (EPA 1987a), in the CLP SOW (EPA 1986, 1987b.c).

PLANNED SAMPLING ACTIVITY REQUIRING CLP ANALYSES

Region II Site WCI Freezer Month/Year of Activity 6/89 Case 1
 Sampling Organization _____ Regional Contact Debus Telephone 312 - 886 - 6186
 Sampling Organization (State, REM, FIT, etc.) _____
 Type of Investigation (RI/FS, Enforcement, etc.) RFA Sampling Visit Activity Status definite
 (Definite, Conditional or Tentative)
 Sampling Date(s) 6/20 Alternate Sampling Date(s) _____
 Sample Shipment Date(s) 6/20 Alternate Shipment Date(s) _____

| Routine Analytical Services Required | Media/Concentration | | | | | | | | | Total | | |
|--------------------------------------|---------------------|-----|------|-------------------------|-----|------|-------------|-----|------|-------|-----|------|
| | Liquid or Water | | | Solid, Soil or Sediment | | | Other (SAS) | | | Low | Med | High |
| | Low | Med | High | Low | Med | High | Low | Med | High | Low | Med | High |
| Full HSL Organics | | | | | | | | | | | | |
| VOA Fraction Only | 3 | | | | | | | | | | | |
| Semi-VOA Fraction Only | | | | | | | | | | | | |
| Pesticide/PCB Fraction Only | | | | | | | | | | | | |
| Dioxin Only | | | | | | | | | | | | |
| HSL Metals & Cyanide | | | | | | | | | | | | |
| HSL Metals Only | 3 | | | | | | | | | | | |

Special Analytical Services Required: Specify (Method, QA, Reporting Requirements to be Provided via SMO Client Request Form)

| | | |
|------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------------------------------|
| Submittal Status: _____ (Current, 1, 2 or 3 Month Projection) | Notification Status: _____ (Initial Notification or Resubmittal) | Resubmittal Status: _____ (Resubmittal With or Without Changes) |
| Submitted By: _____ | Date: _____ | Phone: _____ |
| Approved By: _____ | | Date: _____ |
| Date Notification Received By SMO: _____ | | Date Laboratory(ies) Assigned: _____ |

TABLE 1
Sample Containers and Preservatives

| <u>ANALYSIS</u> | <u>WATER</u> | <u>PRESERVATIVE</u> | <u>HOLDING TIME</u> |
|-----------------|-----------------------|---------------------------------------------------------------|---------------------|
| *Volatile | 2-40 ml. glass vials | ice to 4°C | 7 days |
| Metals | 1-1 liter HDPE bottle | groundwater: filter, 5 ml. 1:1 HNO ₃ (pH <2) | 6 mos. |

*Volatile organic water samples should be taken so that no air is present in the sample.

TABLE 2

Number of Sample Containers
to be used during the
WCI Freezer SV

| <u>MEDIUM</u> | <u>ANALYSIS</u> | # OF SAMPLES + FIELD DUP + SPIKES + BLANKS + CONTAINERS | | | | <u>TOTAL</u> | |
|---------------|-----------------|---------------------------------------------------------|---|-------------------------|---|--------------|----------|
| Water | Volatiles | 3 | 1 | 1 (Triple Volume) | 1 | 2-40 ml | 16-40 ml |
| | Metals | 3 | 1 | | 1 | 1-HDPE | 5-HDPE |

TABLE 3

**SAMPLING EQUIPMENT AND SUPPLIES
TO BE USED DURING WCI FREEZER
SAMPLING VISIT**

SAMPLING

- o Sample bottles various sizes and materials
- o Sample bottle labels
- o Chain-of-custody forms
- o Summary sampling log forms
- o Organic Traffic Reports
- o Field logbook
- o Resealable bags
- o Coolers
- o Packing tape
- o Sample tags
- o Ice
- o Vermiculite
- o Marking pens
- o Protective clothing
- o First aid kit
- o Drinking water
- o pH paper
- o Nitric acid
- o Tool box

DECONTAMINATION (if needed)

- o Washtub
- o Alconox detergent
- o Scrub brushes
- o Squirt bottles
- o Funnel
- o Rinse water catch container (temporary)
- o Plastic sheeting
- o Distilled water
- o Garbage bags
- o Iso-Propanol

Felid Waste Management Needs of Feral Cat Management Groups

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Geologic Survey Notes

- 1 475000000-Bare-drum Waste Container Storage Area
2
3 1800.5-Cubic-Meter-drum Waste Container Storage Area
4
5 Intermediate Ash Container Storage Area
6
7 Former Intermediate Ash Container Storage Area
8
9 Empty Drum Storage Areas
0
1 Spent PCB-Container Storage Vault

79-1

- 1,0,0 Point System B: Westchester County
10-11-11 Point System A: Westchester County

Software Engineering

- #### **11. Local Welfare Institutions**

1000111

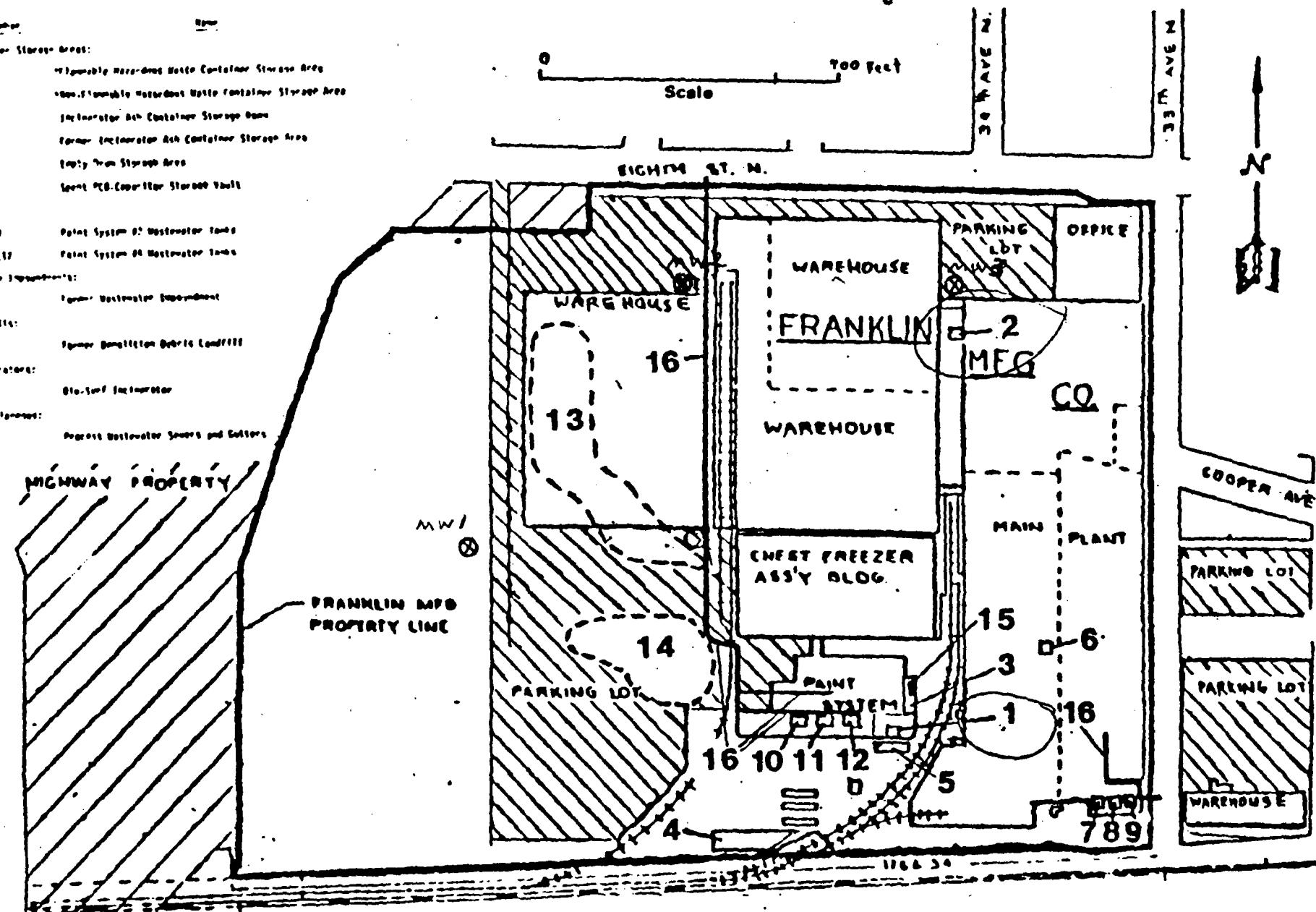
- Upper Peninsula Debris Landfill

1-2-3-4-5-6-7-8

- 88 [Solved Examples](#)

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- 18 Progress Watercolor Shows and Galleries



MONITORING WELL LOCATIONS

Figure 1

Location of SWIUS (Modified From Ref. 1).

REFERENCES

U.S. Environmental Protection Agency, 1987a, RCRA Facility Assessment Quality Assurance Project Plan. February 10, 1987. U.S. EPA Region V Solid Waste Management Branch, Chicago, IL.

U.S. Environmental Protection Agency 1986. Contract Laboratory Program User's Guide. U.S. Environmental Protection Agency Office of Emergency and Remedial Response, Washington, D.C.

U.S. Environmental Protection Agency 1987b. Contract Laboratory Program statement of work for inorganic analysis, multimedia, multiconcentration. Revision July 1987. SOW No. 787. IFB WA87-K025, K026, K027. U.S. Environmental Protection Agency Environmental Monitoring Support Laboratory, Las Vegas, NV.

U.S. Environmental Protection Agency 1987c. Contract Laboratory Program statement of work for organics analysis, multimedia, multiconcentration. Revision July 1987. IFB WA87-K236, K237, K238. U.S. Environmental Protection Agency, Washington. D.C.

APPENDIX A
SITE HEALTH AND SAFETY PLAN

JACOBS ENGINEERING GROUP INC.
SITE HEALTH AND SAFETY PLAN FORM

A. GENERAL INFORMATION

Project Number 004180
(FRANKLIN MFG. CO.)

Site Name: WCF FREEZER DIV Work Assignment Number R05022

Dates of Visit: AUGUST 23, 1988

Objective(s): MONITORING WELL - SPLIT SAMPLE
COLLECTION.

Original Safety Plan: Yes No Modification Number []

Site Location: (address or latitude/longitude) INTERSECTION OF 8TH
STREET & 34TH AVE. ST. CLOUD, MINNESOTA

Directions to Site: I-94 WEST TO U.S. RT. 10 NORTH TO
ST. CLOUD, EXIT STATE RTE 23 WEST, HEAD NORTH
ON HWY. 12, EAST ON 8TH STREET.

Map Attached: Yes No

Site Contact: RICHARD CLUTE Phone (612)253-1212

EPA Contact: ALLEN DEBUS Phone (612)846-6186

Site Type: (active, inactive, landfill, industrial, etc.) ACTIVE & IN-
ACTIVE UNITS ARE PRESENT ON SITE. THE SUMMITS OF
CONCERN ARE INACTIVE.

Site History: (also include complaints from public, previous agency actions, known exposures or injuries, etc.)

FRANKLIN MANUFACTURING COMPANY, WCI FREEZER DIVISION IS A FREEZER MANUFACTURER. FRANKLIN PURCHASED THE SITE IN 1946. A PART A NOTIFICATION AS A HAZARDOUS WASTE STORAGE FACILITY WAS SUBMITTED IN 1980. THIS NOTIFICATION WAS RETRACTED THE SAME YEAR. THE MPCA DETERMINED THE FACILITY WAS A HAZARDOUS WASTE STORAGE FACILITY AND GRANTED INTERIM STATUS.

Site Description and Features: (include principal operations, principal waste disposal methods, and unusual features)

THE EMPTY DRUM STORAGE AREA IS A SWALE WHERE EMPTY DRUMS WERE STORED OVER AN UNPAVED AREA OF SOIL. OVERTURNED 55-GALLON DRUMS AND LEAKING, RUSTED CONTAINERS MAY HAVE RELEASED HAZARDOUS CONSTITUENTS. THE FORMER WASTEWATER LAGOON WAS OPERATED FROM 1965 TO 1979. THIS LAGOON ACCEPTED WASTE BONDERITE, A "SOAPY" DEGREASING MATERIAL, AND CHROMIUM-CONTAINING WASTEWATER FROM PAINT SPRAY BOOTHS. THE LAGOON WAS CLOSED IN 1979.

Surrounding Population: [] Urban Residential [] Industrial
[] Rural Other COMMERCIAL

B. HAZARDOUS MATERIALS/WASTE CHARACTERISTICS

Waste Types: Solid Liquid Gas Sludge Unknown

Other _____

Waste Characteristics: Corrosive Flammable Radioactive

Volatile Toxic Reactive Unknown Other

HAZARDOUS CONSTITUENTS WHICH MAY HAVE BEEN RELEASED
IN THE EMPTY DRUM STORAGE AREA ARE UNKNOWN

Hazardous Material Summary: List hazardous materials/waste and estimate amounts

WASTE BONDERITE - A "SOAPY" DEGREASING MATERIAL CONTAINING IRON AND UNKNOWN

AMOUNTS DISCHARGED TO LAGOON

WASHWATER CONTAINING CHROMIUM FROM PAINT SPRAY BOOTH/S -

UNKNOWN AMOUNTS DISCHARGED TO LAGOON

UNKNOWN MATERIALS DUE TO LEAKAGE IN EMPTY DRUMS STORAGE AREA

C. HAZARD EVALUATION

Hazards of Concern:

Heat Stress Cold Stress Noise Underground Utilities

Overhead Utilities Heavy Equipment Ladders Sharp Objects

Pressurized Airlines Cylinders Scaffolds Explosion/Fire

Unsecured Openings/Walls/Floors Insects & Snakes Biological

Liquids in Open Containers, Ponds and Lagoons Slip, Trip, Fall

Radiological, Other _____

Exposure Hazards: (H = High, M = Moderate, L = Low, U = Unknown,
N/A = Not Applicable)

Inhalation L Skin Contact L Ingestion L Radiological N/A

See Table 1: Chemical Exposure Hazard Summary

Overall Hazard: [] High [] Medium Low [] Unknown

Explanation CONTAMINATION IS AT OR BELOW GROUND
SURFACE - UPGRADED PROTECTIVE CLOTHING TO BE
WORN IF BLOWING DUST POSES A THREAT.

Background Review: Complete [] Incomplete

Comments: THE INFORMATION INCLUDED IN THIS H&S
PLAN IS DERIVED FROM THE PR/VSI REPORT PRE-
PARED BY A.T. KEARNEY & EPA CONTACT PLEEN
DEBLJ.

D. SITE SAFETY WORK PLAN

| Field Activities Covered Under This Plan (Task description/technique/location) | Level of Protection (Primary contingency) | Schedule |
|-----------------------------------------------------------------------------------|----------------------------------------------|----------|
| 1 SPLIT FOUR MONITORING WELL SAMPLES. | D | C |
| 2 | | |
| 3 | | |
| 4 | | |

Table 1
Chemical Exposure Hazard Summary

| DOWN SITE CONTAMINANT | HIGHEST OBSERVED CONCENTRATION AT THIS SITE (Units and media) | HEALTH HAZARD RATING AT THIS SITE | ROUTE OF ENTRY | SYMPTOMS/EFFECT OF EXPOSURE | PEL/TLV ppm or mg/m ³ (specify) | IDLH ppm or mg/m ³ (specify) | PHOTO- IONIZATION POTENTIAL |
|--------------------------|------------------------------------------------------------------------|-----------------------------------------|-------------------------|--------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------------|-----------------------------------|
| CHROMIUM | NA | LOW | INHALATION INGESTION | HISTOLOGIC FIBROSIS OF LUNGS; CHROMIUM (VI) : [CARCINOGENIC] | 1 mg/m ³ | 500 mg/m ³ | |
| IRON | NA | LOW | NE | NE | 1 mg/m ³ (IRON SULFS) | | |

Key

NA = Not Available NE = None Established U = Unknown
 S = Soil SW = Surface Water T = Tailings F = Fly ash
 TK = Tanks A = Air GW = Groundwater SL = Sludge
 D = Drums L = Lagoons

Site Personnel and Responsibilities:

| <u>Name</u> | <u>Company</u> | <u>Responsibility</u> | <u>Jacobs Field Clearance</u> |
|-------------|----------------|-----------------------|---------------------------------------|
| KEN KRUEGER | MFE | Project/WA Manager | |
| KEN KRUEGER | MFE | Site Manager | |
| KEN KRUEGER | MFE | Site Safety Officer | |
| | | | |
| | | | |
| | | | |

Site Control: Map/Sketch attached Site Secured Perimeter Identified Zones of Contamination Identified Comments: ZONES OF CONTAMINATION = EMPTY DRUM
STORAGE AREA, FORMER WASTE WATER LAGOON.

Personal Protection: (if work requires more than one task, specify the level of protection, for each)

Task 1 Level: A B C D

Description: One piece - hooded tyvek coverall, steel toe - steel shank boots, hard hat, safety glasses, nitrile gloves.

Task 2 Level: A B C D

Description: _____

Task 3 Level: A B C D

Description: _____

Task 4 Level: A B C D

Description: _____

Field Monitoring Equipment & Materials: (WILL BE PROVIDED BY MC FREEZER CONTRACTOR.)

| <u>Instrument</u> | <u>Tasks</u> | <u>Action Guideline</u> |
|--------------------|-------------------------------|----------------------------------------------------------------------------------------------------------|
| <u>HnU PIONEER</u> | <u>AMBIENT AIR MONITORING</u> | <u>$\geq 1 \text{ ppm}$ ABOVE BACKGROUND FOR 10 MINUTES CONTINUOUSLY, UPGRADE TO LEVEL C.</u> |
| | | <u>$\geq 5 \text{ ppm}$ ABOVE BACKGROUND STOP OPERATIONS</u> |

Decontamination Procedures: (list stations/equipment and/or attach diagram)

Personnel: DISPOSE OF DISPOSABLE CLOTHING, WASH GLOVES IN TSP SOLUTION

Equipment: BETWEEN SAMPLING AND BEFORE LEAVING SITE, EQUIPMENT WILL BE DECONTAMINATED IN TSP SOLUTION, RINSED IN WATER, RINSED WITH ISO PROPANOL, THEN RINSED WITH DISTILLED WATER. ALL EQUIPMENT WILL BE ALLOWED TO AIR-DRY, THEN WRAPPED IN ALUMINUM FOIL. HnU WILL BE WIPE CLEAN WITH A PAPER TOWEL, AND THE TIP CLEANED WITH A Q-TIP. ALSO INNER DISPOSABLE GLOVES & RESPIRATOR

Site Entry Procedures: BACKGROUND READING ON HNU WILL BE OBTAINED PRIOR TO SITE ENTRY AND RECORDED IN LOGBOOK

Work Limitations (time of day, etc.): DAYLIGHT HOURS ONLY

Investigation Derived Material Disposal: ALL DECONTAMINATION WATER WILL BE DISPOSED OF ON-SITE. ALL DISPOSABLE SOLID MATERIALS WILL BE COLLECTED IN GARBAGE BAGS AND DISPOSED OF ON-SITE

E. EMERGENCY INFORMATION

Emergency Phone Numbers:

| | |
|---------------------------------|----------------------------------|
| Ambulance | MURPHY - (612) 251-8505 OR 911 |
| Hospital Emergency Care | ST CLOUD HOSPITAL (612) 251-2700 |
| Poison Control Center | 1-800-222-1222 |
| Fire | 911 |
| Police | 911 |
| Explosives Unit (if applicable) | |

| | |
|------------------------------|------------------------------|
| CHEMREC | 1-800-424-9300 |
| TSCA Hotline | 202-554-1404 |
| CDC | 404-452-4100 or 404-329-2888 |
| National Response Center | 1-800-424-8802 |
| Pesticide Information Center | 1-800-845-7633 |
| EPA ERT Emergency | 201-321-6660 |
| RCRA Hotline | 1-800-424-9346 |
| Bureau of Explosives | 202-835-9500 |

Other Phone Numbers:

Health and Safety Director

LAURIE SMITH (913) 492-9218
B. NORCH (303) 232-7093

Regional Safety Officer

C. SCHULTZ (614) 841-1533

Project Manager

K. KRUEGER (312) 228-0900

Site Safety and Health Officer

K. KRUEGER (312) 228-0900Site Resources:

Water Supply

WCI FREEZER

Phone

(612) 253-1212

Radio

N/A

Other

—Directions to Hospital
(Attach Map)ST. CLOUD HOSPITAL
1406 6TH AVE. N.FROM FACILITY, TAKE 8TH STREET EAST TO 33RD AVENORTH, EAST ON 12TH STREET, NORTH ON 6TH AVE,TO 14TH STREET, HOSPITAL IS AT 1406 N. 6TH AVE.

F. PLAN APPROVAL

This site safety plan has been written for the exclusive use of Jacobs Engineering Group Inc., its employees and subcontractors. Jacobs claims no responsibility for its use by others. The plan is written for the specified site conditions, dates, and personnel and must be amended if these conditions change.

PLAN PREPARED BY:

Carolyn Meyer Date: 9/15/88
Ken Fruener 8/14/89

APPROVED BY:

Carl D.C. Schutte Date: 8/14/89
Regional Safety Coordinator

Health and Safety Manager

Date:

F. PLAN APPROVAL

This site safety plan has been written for the exclusive use of Jacobs Engineering Group Inc., its employees and subcontractors. Jacobs claims no responsibility for its use by others. The plan is written for the specified site conditions, dates, and personnel and must be amended if these conditions change.

PLAN PREPARED BY:

*Carol J. Meyer +
Ken Krueger* Date: 9/15/88
8/14/87

APPROVED BY:

Regional Safety Coordinator

Date:

Health and Safety Manager

Date:

G. EMPLOYEE CERTIFICATION

By my signature, I certify that I have read, understand, and will abide by,
the health and safety plan for the WCI FREEZER site.

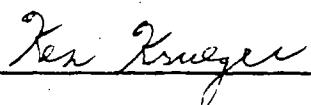
Printed Name

Signature

Company

Date

KEN KRUEGER



MFE

8-14-87

Health and Safety Plan Review Form

Project No. _____ Client _____

Site Name _____

Project Manager _____ Prepared by _____

Company _____ Location _____

 Draft Final

Reviewer's Signature and Date _____

Background Information

- Adequate?
- Relevant?
- Map/Sketch?
- Other?

Site/Waste Characteristics

- Adequate/Complete?

Hazard Evaluation

- Adequate information on hazardous properties of chemicals?
- Physical hazards, heat/cold stress considered?
- Hazard assessment supported?

Site Safety Work Plan

- Level of protection appropriate, supported?
- Specific PPE and other equipment stated?
- Sufficient information?
- Site Safety Officer designated?
- Site control program adequate?
- Decontamination procedures defined?
- Site entry procedures appropriate/adequate?

Emergency Information

- Directions or map to hospital?
- Emergency plan/procedure/phone numbers

Review/Approval

- Who?
- Signed?

Employee Certification

- Provided?
- Signed?

Comments:Overall Evaluation (check one)

- Acceptable
- Acceptable with minor revisions as noted above/in the plan
- Needs substantial revision/rework as noted above/in the plan

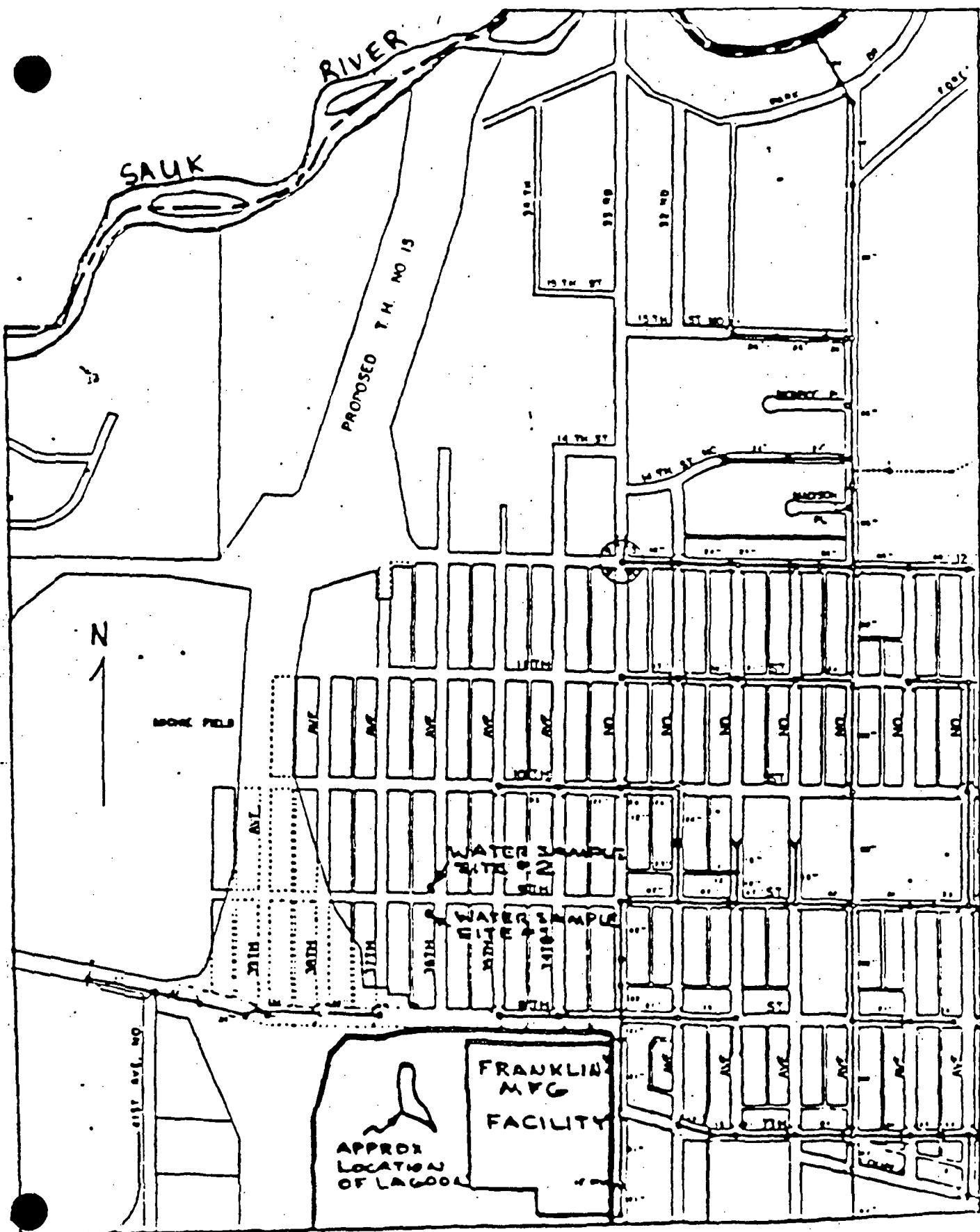


Figure 1

LOCATION OF FRANKLIN MFG / WCI FREEZER FACILITY

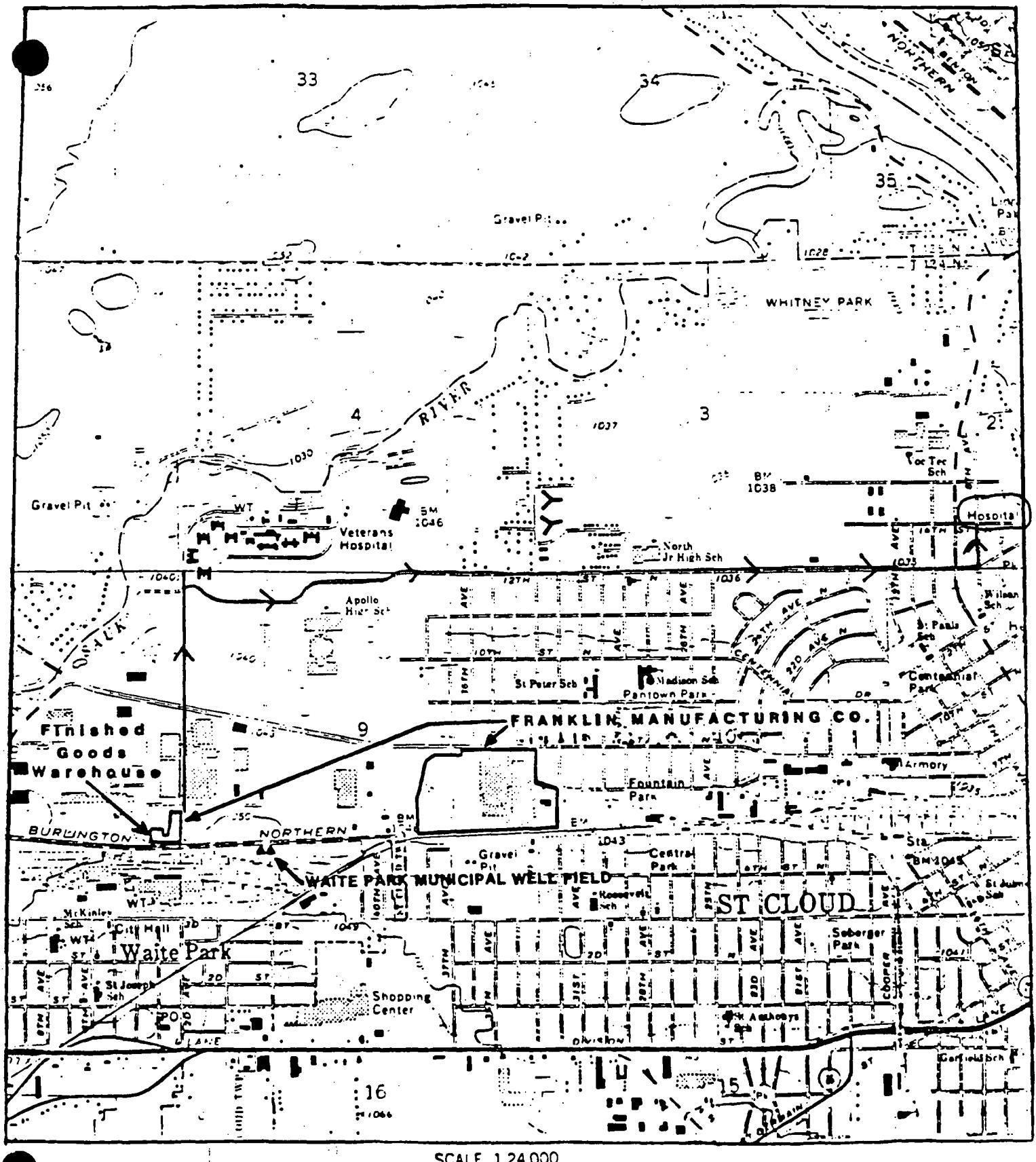


Figure 2
Location of Franklin Manufacturing Company WCI FREEZER DIVISION
DIRECTIONS TO HOSPITAL

APPENDIX B

FIELD LOG SHEET

Facility Name: WCI FREEZER CORP.

Facility Address: ST. CLOUD, MN

Location and Description of Sampling Point: (S01)

MONITORING WELL (UPGRADIENT), OPEN FIELD
WEST SIDE OF PLANT

Field Sample Number: 89KG03S01

Purpose of Sampling: DETERMINE IF GROUNDWATER CONTAMINATED.

Type of Waste: METALS, XYLENE, TOLUENE, AND
METHYL ETHYL KETONE.

Process (if known) Producing Waste: SWMU'S

Suspected Composition, Including Concentrations (if known):

N/A

Sampling Methodology: SPLIT SAMPLE FROM TEFLON
BAILER.

Date and Time of Collection: 1045 ON 8/23/89

Results of Any Field Measurements Made: (AVERAGES -
STABILIZED READINGS); pH 7.1, TEMP. 11°C, COND. 650 mho

Observations and Comments: THE WATER IS VERY
SILTY. VOLATILES PACKED AND SHIPPED TO GULF SOUTH.
METALS PACKED & SHIPPED TO SKINNER & SHERMAN, INC.

Name (Printed): KEN KRUEGER

Signature: _____

FIELD LOG SHEET

Facility Name: WCI FREEZER CORP.

Facility Address: ST. CLOUD, MN

Location and Description of Sampling Point: (S02)

MONITORING WELL (PARKING LOT) NW CORNER

OF WAREHOUSE.

Field Sample Number: 89KG03 S02

Purpose of Sampling: DETERMINE GROUND WATER CONTAMINATION

Type of Waste: (SEE S01)

Process (if known) Producing Waste: SWMU'S

Suspected Composition, Including Concentrations (if known):

N/A

Sampling Methodology: SPLIT SAMPLE FROM TEFLON
BAILER.

Date and Time of Collection: 1150 ON 8-23-89

Results of Any Field Measurements Made: STABILIZED READINGS -
PH - 7.1, TEMP. 13.5°C, COND. - 880 mho

Observations and Comments: WATER IS FAIRLY CLEAR.

VOLATILES SENT TO GULF SOUTH

METALS SENT TO SKINNER & SHERMAN, INC.

Name (Printed): KEN KRUEGER

Signature: _____

FIELD LOG SHEET

Facility Name: WCII FREEZER CORP.

Facility Address: ST. CLOUD, MN

Location and Description of Sampling Point: (S03 & DUPLICATE
S04) MONITORING WELL (PARKING) NE CORNER OF
LOT
WAREHOUSE.

Field Sample Number: PPKG03S03 + S04

Purpose of Sampling: DETERMINE GROUND WATER CONTAMINATION

Type of Waste: (SEE S01)

Process (if known) Producing Waste: SW M U'S

Suspected Composition, Including Concentrations (if known):

N/A

Sampling Methodology: SPLIT SAMPLE FROM TEFLON
BAILER.

Date and Time of Collection: S03 (1250), S04 (1300) ON 8-23-89

Results of Any Field Measurements Made: STABILIZED READINGS -
PH - 7.2, TEMP. - 16°C, COND. - 560 mho

Observations and Comments: WATER IS SILTY (SEDIMENT).
VOLATILES SENT TO GULF SOUTH.

METALS SENT TO SKINNER & SHERMAN, INC.

Name (Printed): KEN KRUEGER

Signature: _____

FIELD LOG SHEET

Facility Name: WCI FREEZER CORP.

Facility Address: ST. CLOUD, MN

Location and Description of Sampling Point: (S05)

FIELD BLANK

Field Sample Number: 89KG03S05

Purpose of Sampling: DETERMINE GROUND WATER CONTAMINATION

Type of Waste: (JEE soil)

Process (if known) Producing Waste: SW M U

Suspected Composition, Including Concentrations (if known):

N/A

Sampling Methodology: SPLIT SAMPLE OF DISTILLED
WATER WAS COLLECTED AFTER POURING THRU
TEFLON RAILER

Date and Time of Collection:

Results of Any Field Measurements Made: NONE TAKEN -
DISTILLED WATER

Observations and Comments:

VOLATILES SENT TO GULF SOUTH

METALS SENT TO SKINNER & SHERMAN, INC.

Name (Printed): KEN KRUEGER

Signature:

APPENDIX C

CHAIN OF CUSTODY RECORD

| PROJ. NO. 89K603 | PROJECT NAME CASE# 12619 | | | | NO. OF CONTAINERS | LOW CONCENTRATION (GROUND WATER) | | | | | |
|---------------------------------------------|-----------------------------|-----------------------------|---------------------------------------------|---------------------------------------------|------------------------------|----------------------------------------------------------------------------------------------------------|-------------|--------------------------|--|-----------------|--------------------------------------|
| SAMPLERS: (Signature) Ken Krieger | | | | | | ORGANICS 40 ml VOA | | | | | |
| STA. NO. | DATE 8/23 | TIME 1045 | COMP <input checked="" type="checkbox"/> | GRAB <input checked="" type="checkbox"/> | STATION LOCATION MW1 | 2 · 40ml X | | | | OTR # FCM 81 | TRA# KK LIQUID/WATER MEATOTHY " " |
| 501 | 8/23 | 1150 | <input checked="" type="checkbox"/> | MW2 (INCLUDES SPIKE) | 6 · 40ml X | | | | | FCM 82 | MEATOKH " " |
| 502 | 8/23 | 1250 | <input checked="" type="checkbox"/> | MW3 | 2 · 40ml X | | | | | FCM 83 | MEATOKH " " |
| 503 | 8/23 | 1300 | <input checked="" type="checkbox"/> | MW4 | 2 · 40ml X | | | | | FCM 84 | MEATOKH " " |
| 504 | 8/23 | 1025 | <input checked="" type="checkbox"/> | FIELD BLANK | 2 · 40ml X | | | | | FCM 85 | MEATOKH " " |
| Relinquished by: (Signature) Ken Krieger | | Date / Time 8/23/89 1700 | Received by: (Signature) FED. EXPRESS | | Relinquished by: (Signature) | | Date / Time | Received by: (Signature) | | | |
| Relinquished by: (Signature) | | Date / Time | Received by: (Signature) | | Relinquished by: (Signature) | | Date / Time | Received by: (Signature) | | | |
| Relinquished by: (Signature) | | Date / Time | Received for Laboratory by: (Signature) | | Date / Time | Remarks SHIPPED: FEDERAL EXPRESS TO: GULF SOUTH AIRBILL # 2756317592 CUSTODY SEAL # 8046 + 8047 | | | | | |

Distribution: White — Accompanies Shipment; Pink — Coordinator Field Files; Yellow — Laboratory File

CHAIN OF CUSTODY RECORD

| PROJ. NO. | PROJECT NAME | | | | NO. OF CONTAINERS | LOW CONCENTRATION (GROUND WATER) | | | | | REMARKS |
|-------------------------------------------------------------------|--------------|--------------|--------------------------------------------|----------------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------|-------------|--------------------------|--------------|---------------|---------|
| | CASE # 12619 | | | | | INORGANICS TOTAL METALS | | | | | |
| STA. NO. | DATE | TIME | COMP | GRAB | STATION LOCATION | | 1 LITER X | 1 LTR | 0TR | Liquids/WATER | |
| S01 | 8/23 | 1045 | <input checked="" type="checkbox"/> | MW1 | | | | | MEAX 01 | ECM 81 | " |
| | | | | | | | | | TAG # 139513 | | |
| S02 | 8/23 | 1150 | <input checked="" type="checkbox"/> | MW2 (INCLUDED SPIKE) | 2 LITER X | | | | MEAX 02 | ECM 82 | " |
| | | | | | | | | | TAG # 139510 | | |
| | | | | | | | | | 139487 | | |
| S03 | 8/23 | 1250 | <input checked="" type="checkbox"/> | MW3 | 1 LITER X | | | | MEAX 03 | ECM 83 | " |
| | | | | | | | | | TAG # 139589 | | |
| S04 | 8/23 | 1300 | <input checked="" type="checkbox"/> | MW4 | 1 LITER X | | | | MEAX 04 | ECM 84 | " |
| | | | | | | | | | TAG # 139591 | | |
| S05 | 8/23 | 1025 | <input checked="" type="checkbox"/> | AT FIELD BLANK | 1 LITER X | | | | MEAX 05 | ECM 85 | " |
| | | | | | | | | | TAG # 139595 | | |
| NOTE: METALS WERE FILTERED 1 PREFILTERED WITH HNO ₃ | | | | | | | | | | | |
| Relinquished by: (Signature) | | Date / Time | Received by: (Signature) | | Relinquished by: (Signature) | | Date / Time | Received by: (Signature) | | | |
| <i>Ken Krueger</i> | | 8/23/81 1300 | FED. EXPRESS | | | | | | | | |
| Relinquished by: (Signature) | | Date / Time | Received by: (Signature) | | Relinquished by: (Signature) | | Date / Time | Received by: (Signature) | | | |
| | | | | | | | | | | | |
| Relinquished by: (Signature) | | Date / Time | Received for Laboratory by: (Signature) | | Date / Time | Remarks SHIPPED: FEDERAL EXPRESS TO: SKINNER & SHERMAN, INC. AIRBILL # 2756317583 CUSTODY SEAL # 8048 & 8049 | | | | | |
| | | | | | | | | | | | |

Distribution: White — Accompanies Shipment; Pink — Coordinator Field Files; Yellow — Laboratory File

CENTRAL REGIONAL LABORATORY SAMPLE DATA REPORT
ORGANICS/INORGANICS

THIS FORM IS TO BE USED FOR SAMPLES SENT TO CONTRACT ONLY

CASE NUMBER/SAS NO. 12619

SITE NAME: INC FREEZER

LABORATORY ORGANICS - GULF SOUTH DATE SHIPPED 8/23/88
INORGANICS - SKINNER & SHERMAN

SUPERFOUND DU NUMBER

EPA RPM or OSC (SMS)/(CES) ALLEN - FEB 83

LABORATORY ORGANICS - GULF SOUTH DATE SHIPPED 8/23/88
INORGANICS - SKINNER & SHERMAN

PAGE 1 OF 1

ACTIVITY NUMBER

APPENDIX D



**USEPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 ALEXANDRIA, VA 22313
703/557-2490 FTS-557-2490**

CASE NO: 12619

SAS NO:
(IF APPLICABLE)

ORGANIC TRAFFIC REPORT

(FOR CLP USE ONLY)

| | | | |
|--------------------------------------------------------------------|--|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| TYPE OF ACTIVITY (CIRCLE ONE) ① | | SHIP TO: GULF SOUTH ENVIRON. LABS 6801 PRESS DR. EAST BLDG NEW ORLEANS, LA 70126 ③ | SAMPLE DESCRIPTION (ENTER IN BOX A) ④ 1. SURFACE WATER 5. SEDIMENT 2. GROUND WATER 6. OIL (SAS) 3. LEACHATE 7. WASTE (SAS) ⑤ |
| SUPERFUND—PA SI ESI RIFS RD RA ER NPLD O&M OTHER | | | |
| NON-SUPERFUND—RCRA PROGRAM | | | |
| SITE NAME: <u>WCI FREEZER</u> | | ATTN: CINDY PALAZZO | |
| CITY, STATE: <u>ST. CLOUD, MN</u> | | SITE SPILL ID: | |
| REGION NO: SAMPLING COMPANY ② <u>X METCALF & EDDY, INC.</u> | | SAMPLING DATE: ④ <u>8/23/89</u> | |
| SAMPLER: (NAME) KEN KRUEGER <u>Ken Krueger</u> | | BEGIN: _____ | END: _____ |
| | | DATE SHIPPED: <u>8/23/89</u> CARRIER: FX ⑤ | |
| | | AIRBILL NO: <u>2756317572</u> | |
| TRIPLE VOLUME REQUIRED FOR MATRIX SPIKE/DUPLICATE AQUEOUS SAMPLE | | | |
| SHIP MEDIUM AND HIGH CONCENTRATION SAMPLES IN PAINT CANS | | | |
| SEE REVERSE FOR ADDITIONAL INSTRUCTIONS | | | |

| CLP SAMPLE NUMBER (FROM LABELS) | SAMPLE DESCRIPTION (FROM BOX 1) 1 2 3 4 5 6 7 | CONCENTRATION L = LOWMED H = HIGH (SAS) | RAS ANALYSIS | SPECIAL HANDLING | STATION LOCATION |
|------------------------------------------|-----------------------------------------------------|--------------------------------------------|-----------------|---------------------|---------------------------------|
| ECM 81 | 2 L ✓ | | | MW1 | S01 |
| CM 82 | 2 L X | | | MW2 | S02 (VOLUME INC. DOES SPIKE) |
| ECM 83 | 2 L X | | | MW3 | S03 |
| ECM 84 | 2 L X | | | MW4 | S04 |
| ECM 85 | 2 L X | | | (FIELD BLANK) | S05 |
| | | | | | |
| | | | | | |
| | | | | | |

APPENDIX E



**USEPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 ALEXANDRIA, VA 22313
703/557-2490 FTS-557-2490**

CASE NO: 12619

**SAS NO:
(IF APPLICABLE)**

INORGANIC TRAFFIC REPORT

(FOR CLP USE ONLY)

| | | | | | |
|-----------------------------------------------------------------------------|--|---------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------|--|
| TYPE OF ACTIVITY (CIRCLE ONE) ① | | SHIP TO: SKINNERY SHERMAN, INC. ③ 300 SECOND AVE. WALTHAM, MA 02254 | | SAMPLE DESCRIPTION (ENTER IN BOX A) ⑥ 1. SURFACE WATER 5. SEDIMENT 2. GROUND WATER 6. OIL (SAS) 3. LEACHATE 7. WASTE (SAS) | |
| SUPERFUND—PA SI ESI RIFS RD RA ER NPLD O&M OTHER | | | | | |
| NON-SUPERFUND—RCRA PROGRAM | | | | | |
| SITE NAME: <u>WCI FREEZER</u> | | ATTN: <u>MARILYN FONSECA</u> | | DOUBLE VOLUME REQUIRED FOR MATRIX SPIKE/DUPLICATE AQUEOUS SAMPLE | |
| CITY, STATE: <u>ST. CLOUD, MN</u> | | SITE SPILL ID: | | SHIP MEDIUM AND HIGH CONCENTRATION SAMPLES IN PAINT CANS | |
| REGION NO.: <u>IV</u> SAMPLING COMPANY ② <u>METCALF & EDDY, INC.</u> | | SAMPLING DATE: <u>8/23/89</u> | | SEE REVERSE FOR ADDITIONAL INSTRUCTIONS | |
| SAMPLER: (NAME) <u>KEN KRUEGER</u> | | BEGIN: _____ END: _____ | | | |
| | | DATE SHIPPED: <u>8/23/89</u> CARRIER: <u>EX</u> ⑤ | | | |
| | | AIRBILL NO: <u>2756317583</u> | | | |

9

TECHNICAL REPORT OF WASTEWATER SURVEY
BONDERITE LINE #4
FRANKLIN MANUFACTURING COMPANY
ST. CLOUD, MINNESOTA

DATE OF SURVEY: AUGUST 6/7 and 17/18, 1979

Prepared for: Warren Hull, Vice President
Franklin Manufacturing Company
St. Cloud, Minnesota

Prepared by: Steve A. Vanderboom, P. E.
PACE Laboratories, Inc.
Minneapolis, Minnesota

Date of report: September 24, 1979

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I. INTRODUCTION

This study has been performed as specified in Franklin Manufacturing Company's purchase order 21450, dated July 30, 1979. The wastewater survey was initiated on August 6, 1979 and extended for a six consecutive day period through Saturday, August 11, 1979. A second weekend survey was performed on August 17/18, 1979. Twenty-four-hour composite samples were collected in the manhole receiving wastewater from the Bonderite Line #4 and from the Line #4 Paint Booth System. Both systems discharge into this manhole which then discharges to the on-site wastewater pond at Franklin Manufacturing. The wastewater flow was also recorded at this site. All twenty-four-hour samples were composited based upon the flow recorded. Grab samples were collected of the discharge from the Line #4 Paint Booth.

This report and the data contained herein is the property of the client, Franklin Manufacturing Company. A copy of the report shall be maintained in the files of PACE Laboratories, Inc. The information in this report is considered confidential and will not be released to any party without the written or direct verbal authorization of the client.

II. SAMPLE SITE DATA

A. Line #4 Bonderite System and Paint Booth

The sampling and flow monitoring of the Line #4 Bonderite System were performed in the manhole adjacent to the corner of the existing warehouse building. At the time of the wastewater survey this manhole discharged directly to the wastewater pond on Franklin Manufacturing property. The manhole received flows from both the Line #4 Bonderite System and from the Line #4 Paint System. A 90° V-notch weir was installed in the manhole. The flow was monitored using this 90° V-notch weir and a Leupold Stevens Type F level recorder. The charts were changed once every twenty-four hours.

Samples were collected every fifteen minutes using ISCO automatic samplers. Four samples were composited into one bottle representing the average wastewater discharged over a one-hour period of time. The twenty-four-hourly samples were composited based upon the flow records into one flow composite sample. Two ISCO samplers were used at this location. One was preserved with sodium hydroxide pellets for the determination of the total cyanide concentrations. The samplers were iced each day to keep the samples as cool as possible. In addition, grab samples were collected during the discharge of the Bonderite holding tanks. These samples were held for future analysis if required.

B. Line #4 Paint Booth

The wastewater from the Paint Booth is discharged once per week on Friday evening or early Saturday morning. The discharge from this paint booth flowed through a separate sewer line to the manhole location and then to the wastewater pond. A series of grab samples were collected during the time when the paint booth was being discharged. This series of grab samples was composited into one representative sample of paint booth wastewater. The increase in flow as a result of the paint booth discharge was recorded on the level recorder charts, however, the total flow from the paint booth was estimated based upon the volume of the tank.

III. DATA REVIEW

A. Flows

The flow records for the wastewater discharged from the Line #4 Bonderite and Paint System are shown in Table I. The average hourly wastewater flows have been plotted and are shown in Figures I through VI. The average daily flow from the Bonderite #4 system was 76,400 gallons. Some significant peak flows were recorded on 8-9/10, 10/11, and 17/18. The peaks recorded on 10/11 and 17/18 were as a result of the discharge of the paint booth wastewater and the Bonderite #4 system holding tanks. These peaks can be expected to occur on a weekly basis during the discharge of the holding tanks and clean-up of the Bonderite system. The peak on 8-9/10 appears to be a result of rainfall during that time period. The open manhole cover apparently allowed a significant quantity of runoff water to affect the results of the flow record. Figures V and VI should be studied closely to determine the effect of the peak hourly flows on any proposed wastewater pretreatment system. On 8-8/9 Wes Leedahl recorded the water meter readings for the Line #4 Bonderite and Paint system area. This record of water usage compares very closely to the total flow measured at the manhole location. This verifies the accuracy of the flow measurement.

The peak flows occurred during the weekly discharge of the Bonderite and Paint Booth holding tanks. Table II lists the material used, the tank size, product volume used, and the temperature range for the holding tanks in Bonderite Line #4.

The Paint Booth tanks for Line #4 are discharged once each week on a Friday night or early Saturday morning. The volume of the paint booth discharge has been calculated to be 24,415 gallons based upon the dimensions of the paint booth. The paint booth is drained over about a 45 to 60-minute period of time. Valves are in place which can control the discharge rate from the paint booth system.

B. Laboratory

Table III shows the results of laboratory analysis for the wastewater samples collected from the Bonderite and Paint Booth Line #4. The parameter list was based on the existing city ordinance and recommendations from Mr. Gerald Mahon, City of St. Cloud. The column adjacent to the parameter list shows the minimum detection limit for that parameter. In cases where a particular pollutant could not be detected, the result was listed as "less than" (<), the minimum detection limit. For example, total cyanide was less than 0.02 mg/l in all samples tested. The Table shows the results of six consecutive days of sampling plus one additional day one week later. The column showing the average results represents the average for the six consecutive day samples collected from 8-6/7 through 8-11. This should represent the average concentration of pollutants discharged over a one-week period of time.

The column labeled Paint Booth shows the analytical results from a series of grab samples collected during the weekly discharge of the paint booth. The only analytical result of any significance in this sample is the biochemical oxygen demand. This value of 1,120 exceeds the surcharge cut-off rate of 240 mg/l. This is probably not of great significance due to the low volume of discharge on a weekly basis.

The pond sample was collected at a point approximately halfway between the pond inlet and the deepest part of the pond on the north end. The most significant test results from the pond grab sample were the concentrations of total and hexavalent chromium.

A review of the average values of the week-long wastewater survey shows that on the average the pollutant concentrations are below the existing St. Cloud ordinance limits. The ordinance limits are listed in the right hand column. A detailed review of the individual data points shows a few instances where the daily concentrations of pollutants exceed or approach the St. Cloud ordinance limits. On 8-10/11 the total chromium concentration was 15 mg/l while the hexavalent chromium was 13 mg/l. The value of 13 mg/l exceeded the recommended limit of

10 mg/l. This isolated high concentration appears to be a result of the discharge of the Line #4 Bonderite System and Paint Booth System. During the weekend clean-up periods, high concentrations of iron were also noted. Although the concentrations of iron are relatively high during clean-up, the toxicity of iron is relatively low. There was one isolated incident where oil and grease was approaching the 150 mg/l limit. This high concentration was probably the result of the tank drainage and cleaning activity which occurred on Friday night or Saturday morning. The remainder of the test results shown in Table III pose no significant problems relative to future wastewater disposal.

IV. COMMENTS

1. The total flow from the #4 Bonderite Line averaged about 53 gallons per minute during the twenty-four hours of sampling and flow measurement. As shown on Figures I through V the actual average wastewater flow range is between 60 and 80 gallons/minute during peak production.
2. The highest concentration of pollutants entering the system is during the dump of the Bonderite and Paint System holding tanks on Friday night or Saturday morning and during the ensuing clean-up.
3. Any future design of wastewater treatment system must consider the peak flows and pollutant loadings which result from the dump of these holding tanks.
4. Based on the results of this survey, the wastewater being discharged to the pond could be discharged to the sanitary sewer system.

5. The city ordinance limits will probably be changed within the next two years. The limits on pollutants such as chromium will be lowered and may result in Franklin installing a wastewater pretreatment system.
6. Franklin Manufacturing should maintain close contact with city officials to keep up-to-date on proposed changes of these ordinance limits.
7. Prior to installation of any pretreatment system, grab samples from the Bonderite storage tanks should be evaluated for any problem pollutants, such as chromium. Alternatives for using less hazardous chemicals in the process should be considered.

All laboratory data contained in this report was obtained using EPA approved methodologies. All analyses were performed by me or under my direct supervision.

William A. O'Connor, Analytical Chemist
Laboratory Director

This wastewater survey was conducted and the technical report prepared by me or under my direct supervision.

Steve A. Vanderboom, P. E.
Environmental Engineer
Minnesota Reg. #13636

TABLE I

9/24/79

FLOW DATA
 BONDERITE LINE #4 WASTEWATER SURVEY
 FRANKLIN MANUFACTURING COMPANY
 ST. CLOUD, MINNESOTA
 PACE Laboratories, Inc.

| | <u>8-6/7</u> | <u>8-7/8</u> | <u>8-8/9</u> | <u>8-9/10</u> | <u>8-10/11</u> | <u>Average</u> | <u>8-17/18*</u> |
|--------------------------|--------------|--------------|--------------|---------------|----------------|----------------|-----------------|
| Total Flow, gals./day | 69,000 | 74,000 | 82,000 | 77,000 | 80,000 | 76,400 | 87,000 |
| Average Flow, gals./min. | 48 | 51 | 57 | 53 | 56 | 53 | 60 |
| Peak Flow, gals./min. | 60 | 70 | 81 | 136 | 144 | 127 | 170 |
| Minimum Flow, gals./min. | 2 | 3 | 12 | 3 | 20 | 12 | 12 |
| Water Meter, gallons | - | - | 81,000 | - | - | - | - |

* 19 hours of flow monitored from 4:30 PM on 8/17 to 11:30 AM on 8/18/79.

TABLE II

9/24/79

BONDERITE LINE #4 TANK VOLUMES
 FRANKLIN MANUFACTURING COMPANY
 ST. CLOUD, MINNESOTA
 PACE Laboratories, Inc.

| <u>Material Used</u> | <u>Tank Size Gallons</u> | <u>New Charge</u> | <u>Temperature Range of</u> |
|--------------------------------------|--------------------------|-----------------------------------------------------|-----------------------------|
| Parco ^(R) Cleaner 2351 | 3,750 | 160 lbs. PCL 2351 and 80 lbs. Caustic Soda | 160 to 180° |
| Hot Water Rinse | 3,750 | - | 155 ± 5° |
| Bonderite 1000 | 1,800 | 756 lbs. Bond. 1000 37 lbs. Soda Ash | 155 to 165° |
| Cold Water Rinse | 1,600 | - | Unheated |
| Parcolene ^(R) 60 | 1,650 | 60 lbs. 60A 7 lbs. 60B | R.T. to 160°F |

TABLE III

9/24/79

RESULTS OF LABORATORY ANALYSIS
 BONDERITE LINE #4 - WASTEWATER SURVEY
 FRANKLIN MANUFACTURING COMPANY
 ST. CLOUD, MINNESOTA
 PACE Laboratories, Inc.

| Parameter, mg/l | Min. Det. Limit | Line #4 | | | | | | | Paint Booth 8-11 | Pond Grab | Avg.* | St. Cloud Ordinance Limits |
|------------------------------|-----------------------|---------|-------|-------|--------|---------|-------|---------|------------------------|--------------|-------|----------------------------------|
| | | 8-6/7 | 8-7/8 | 8-8/9 | 8-9/10 | 8-10/11 | 8-11 | 8-17/18 | | | | |
| Total Cyanide | 0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | <0.02 | 10.0 |
| Total Chromium | 0.05 | 11 | 8.2 | 7.6 | 11 | 15 | 11 | 10 | <0.05 | 9.2 | 11 | 25.0 |
| Hexavalent Chromium | 0.01 | 9.6 | 6.4 | 6.2 | 8.0 | 13 | 2.0 | 8.2 | <0.4 | 5.2 | 7.5 | 10.0 |
| Zinc | 0.01 | 0.01 | <0.01 | 0.09 | 0.23 | 0.11 | 0.18 | 0.23 | <0.01 | 0.03 | <0.10 | - |
| Iron | 0.05 | 4.4 | 4.0 | 3.6 | 5.3 | 53 | 57 | 12 | 1.0 | 27 | 21 | 50.0 |
| Boron | 0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | 1.0 |
| Copper | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 0.10 | 0.20 | 0.10 | <0.05 | 0.05 | <0.08 | 3.0 |
| Lead | 0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | 0.1 | <0.1 | <0.1 | 0.5 |
| Nickel | 0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | <0.05 | 15.0 |
| Cadmium | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 2.0 |
| Biochemical Oxygen Demand | 1 | 10 | 25 | 12 | 15 | 160 | 135 | 240 | 1120 | 250 | 60 | 240 |
| Suspended Solids | 1 | 30 | 30 | 43 | 39 | 248 | 330 | 178 | 52 | 133 | 114 | 218 |
| Ortho Phosphorus | 0.02 | 60 | 49 | 48 | 52 | 100 | 72 | 66 | <0.2 | 88 | 64 | - |
| Oil & Grease | 1 | 8 | 22 | 35 | 46 | 130 | 77 | 51 | 3 | 70 | 53 | 150 |
| pH (Unit) | 0.1 | 8.2 | 9.2 | 8.3 | 7.6 | 8.7 | 8.8 | 8.9 | 7.7 | 7.4 | 8.5 | <10 |

< means "less than"

* Average value represents average of the six consecutive day samples collected from 8-6/7 to 8-11.

FIGURE I

9/24/79

FLOW RECORD - AUGUST 6/7, 1979
BONDERITE LINE #4 WASTEWATER SURVEY
FRANKLIN MANUFACTURING COMPANY
ST. CLOUD, MINNESOTA
PACE Laboratories, Inc.

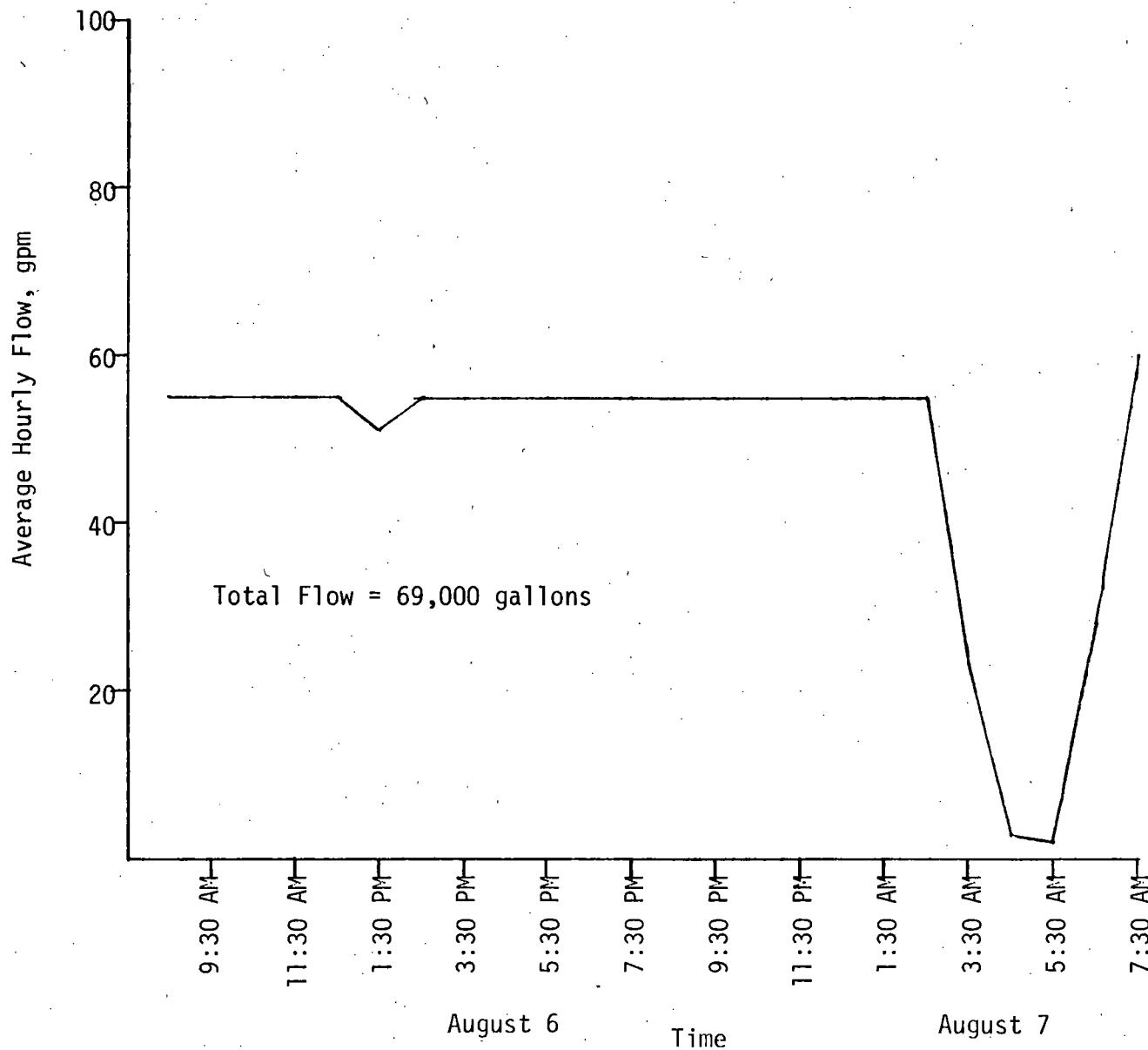


FIGURE II

9/24/79

FLOW RECORD - AUGUST 7/8, 1979
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FRANKLIN MANUFACTURING COMPANY
ST. CLOUD, MINNESOTA
PACE Laboratories, Inc.

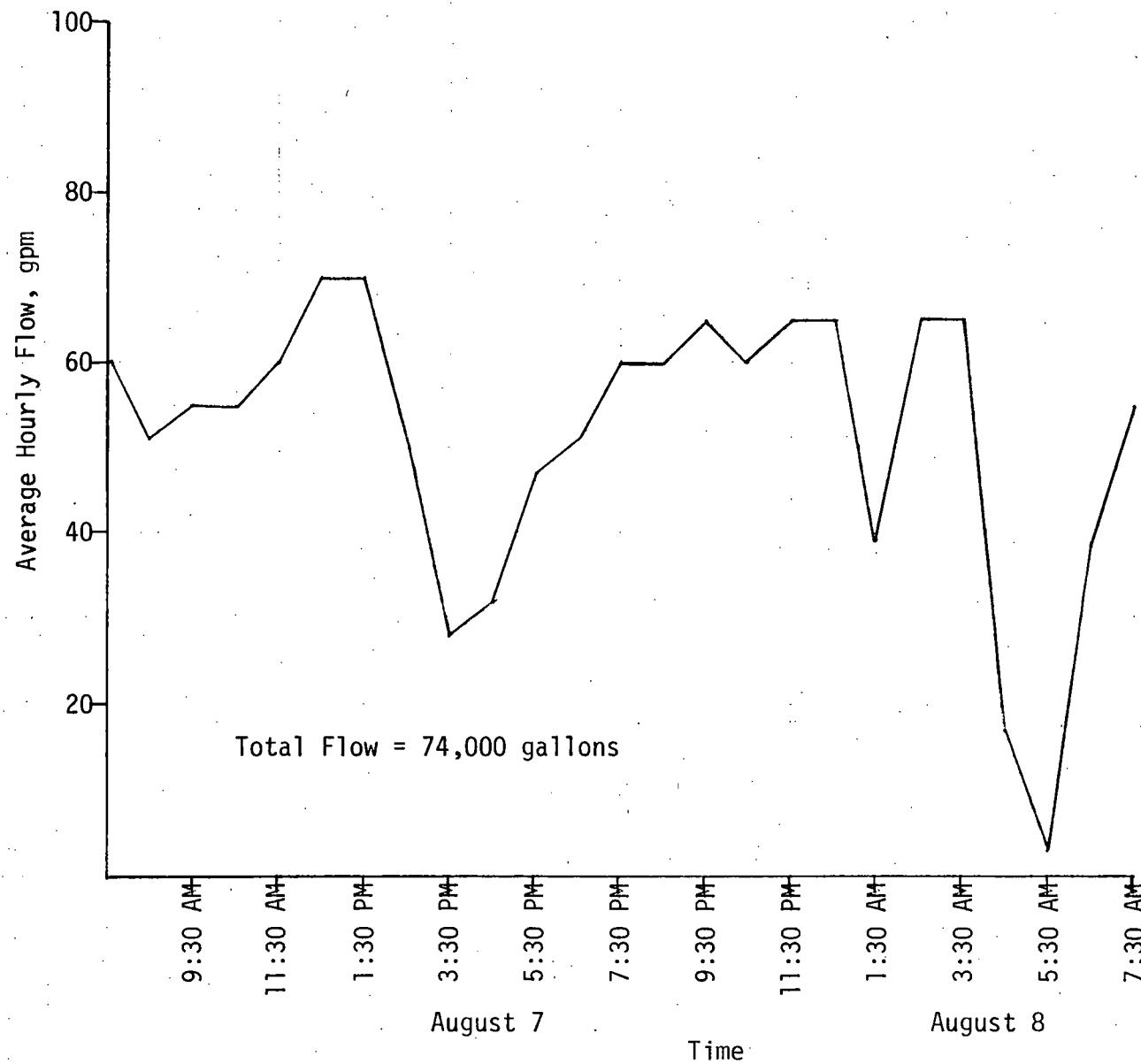


FIGURE III

9/24/79

FLOW RECORD - AUGUST 8/9, 1979
BONDERITE LINE #4 WASTEWATER SURVEY
FRANKLIN MANUFACTURING COMPANY
ST. CLOUD, MINNESOTA
PACE Laboratories, Inc.

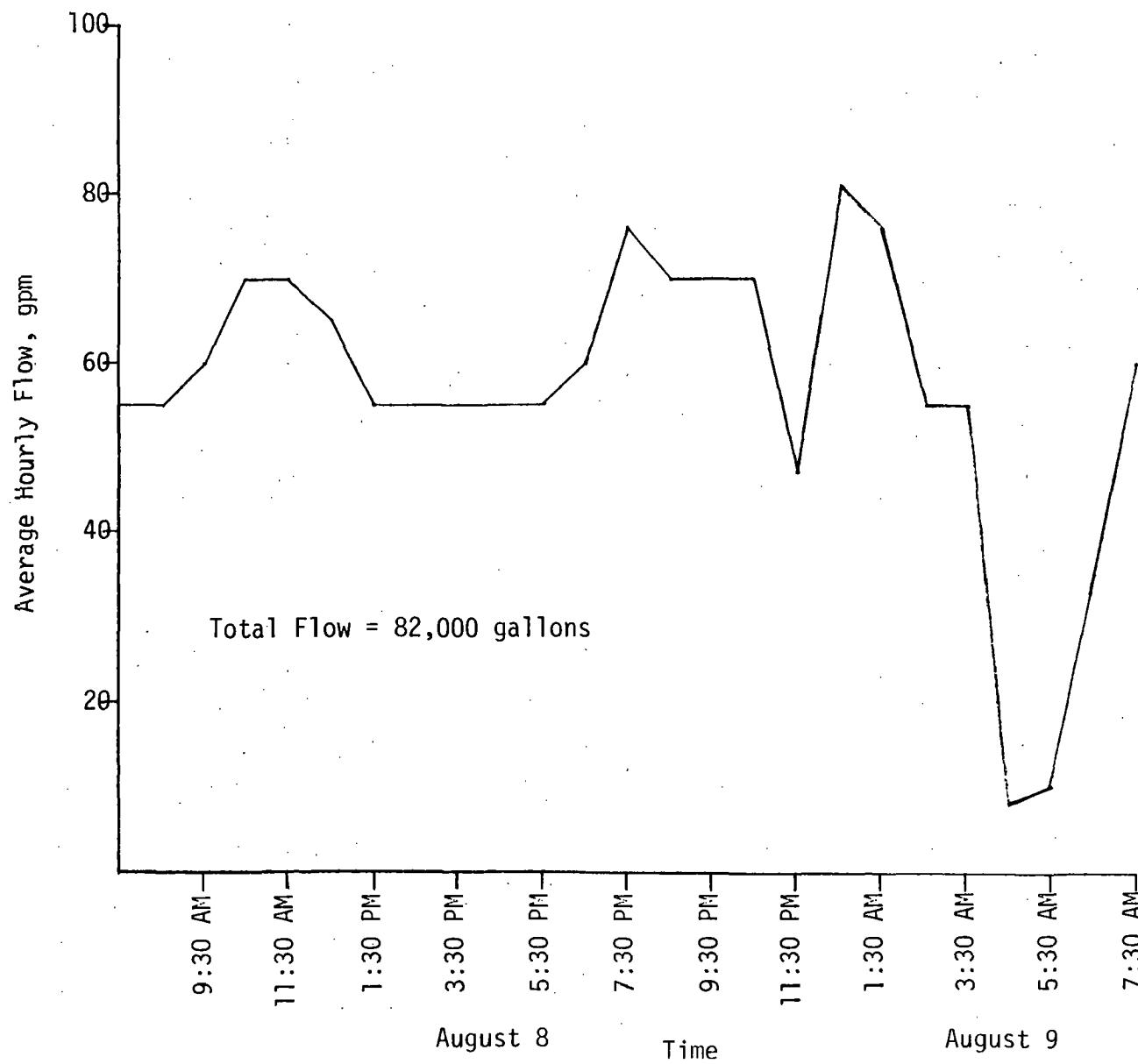


FIGURE IV

FLOW RECORD - AUGUST 9/10, 1979
BONDERITE LINE #4 WASTEWATER SURVEY
FRANKLIN MANUFACTURING COMPANY
ST. CLOUD, MINNESOTA
PACE Laboratories, Inc.

9/24/79

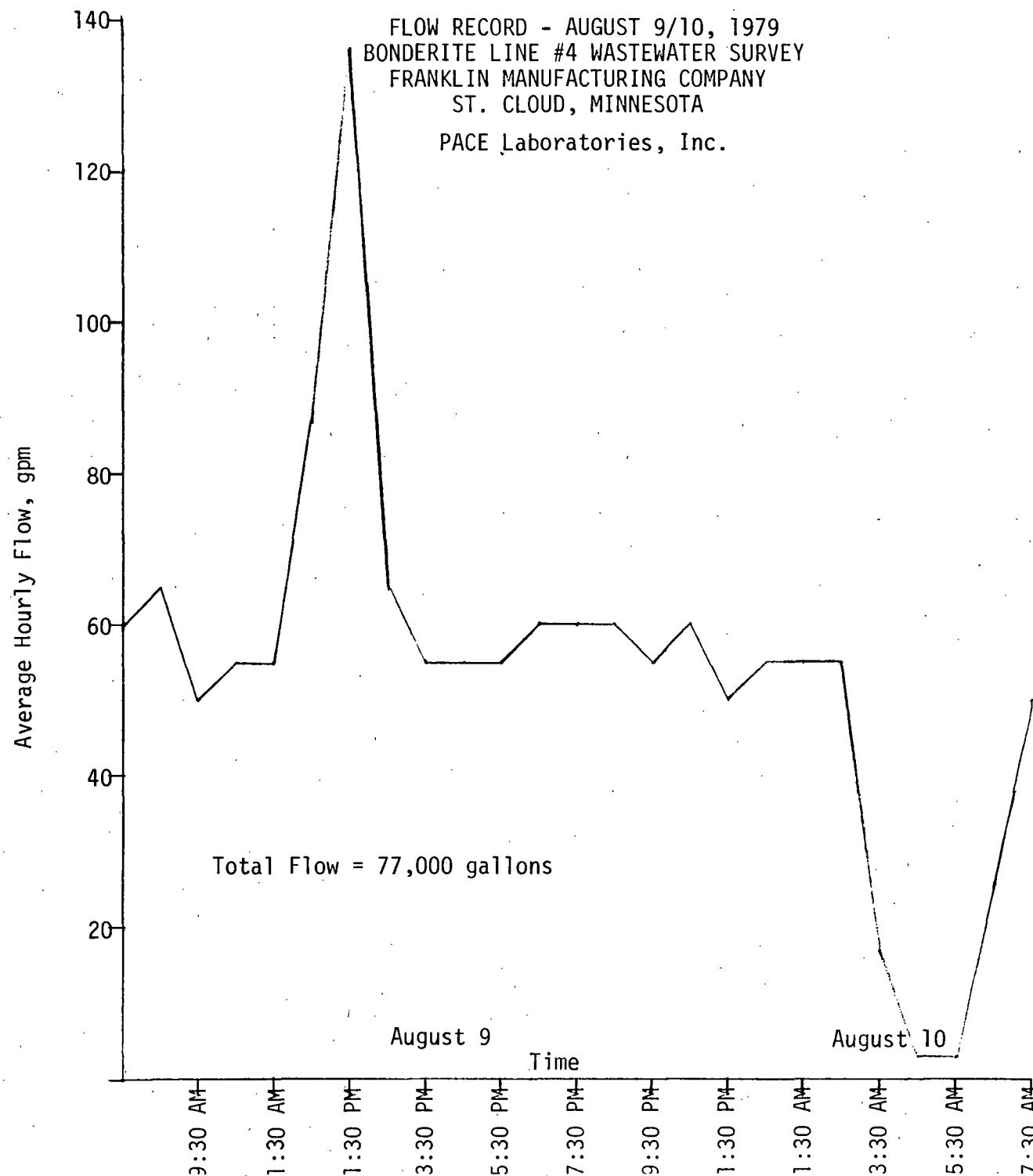


FIGURE V

9/24/79

FLOW RECORD - AUGUST 10/11, 1979
BONDERITE LINE #4 WASTEWATER SURVEY
FRANKLIN MANUFACTURING COMPANY
ST. CLOUD, MINNESOTA

PACE Laboratories, Inc.

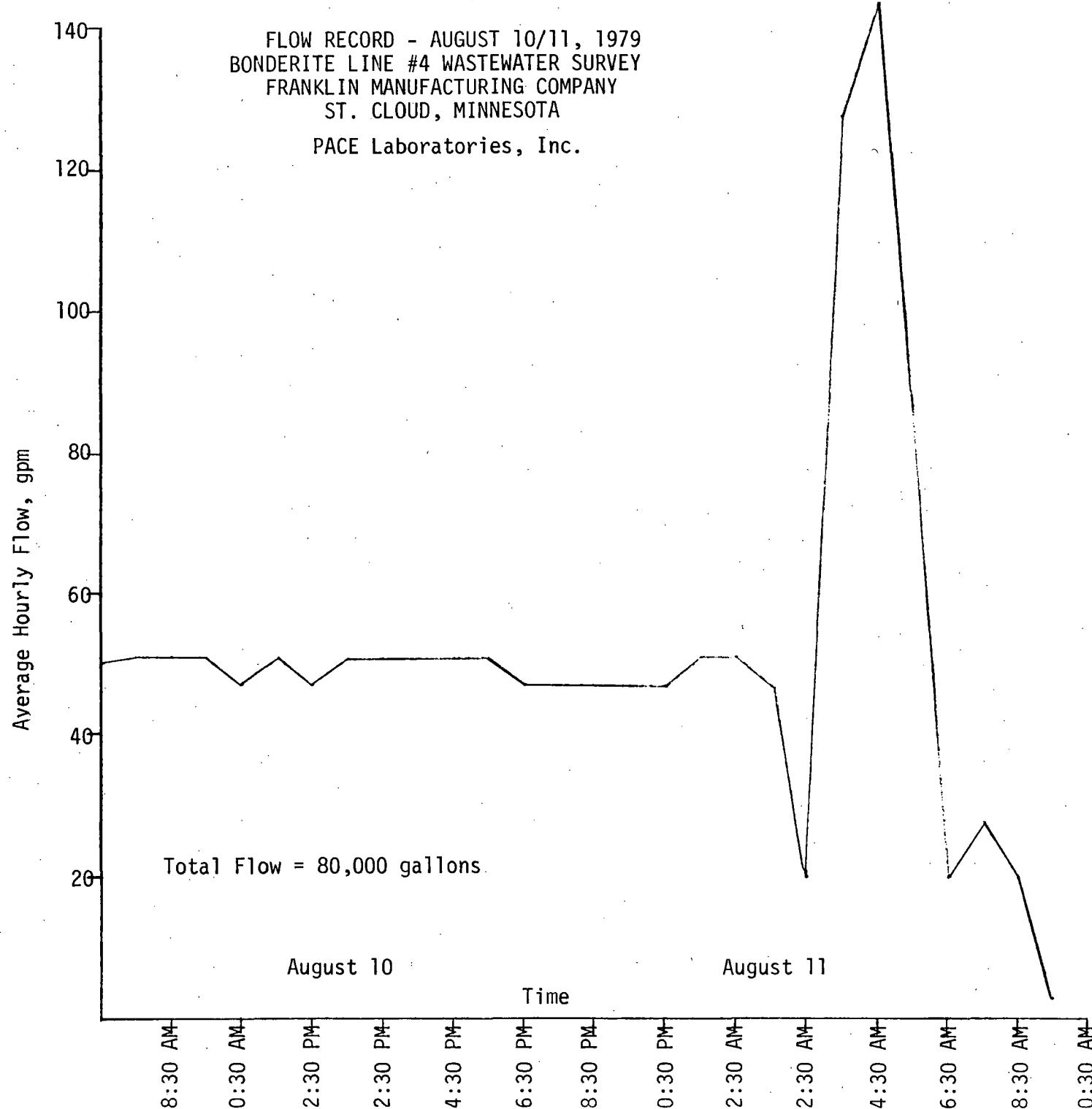
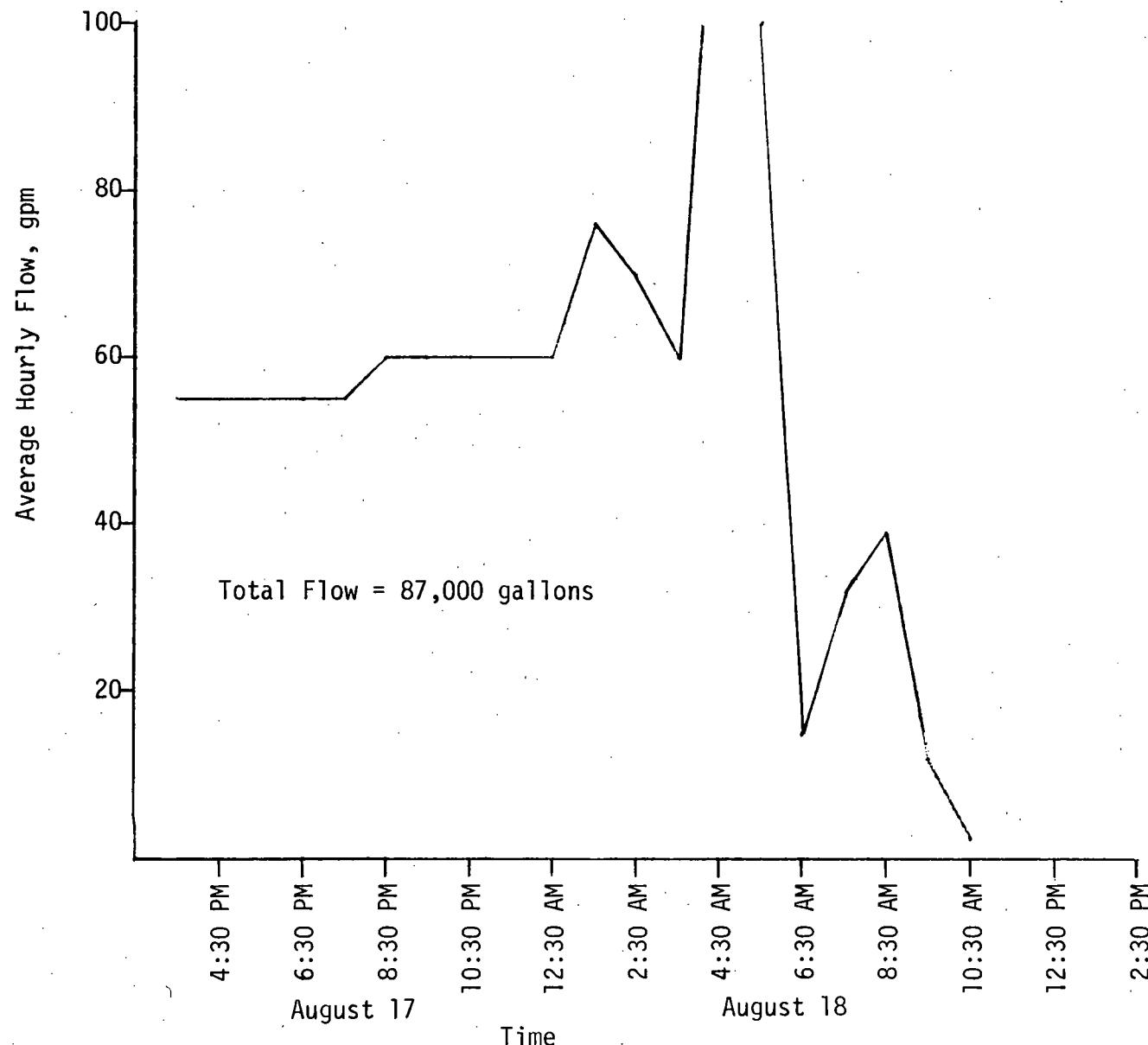
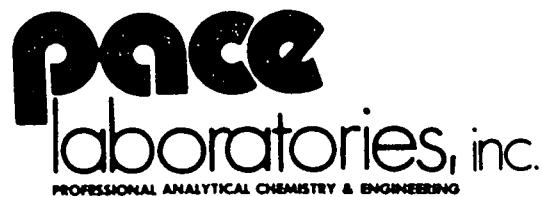


FIGURE VI

9/24/79

FLOW RECORD - AUGUST 17/18, 1979
BONDERITE LINE #4 WASTEWATER SURVEY
FRANKLIN MANUFACTURING COMPANY
ST. CLOUD, MINNESOTA
PACE Laboratories, Inc.





Offices:
Minneapolis, Minnesota
Tampa, Florida
Coralville, Iowa

1710 Douglas Drive North □ Minneapolis, MN 55422 □ Phone (612) 544-5543 □ FAX (612) 544-3974

**Proposed Sampling Work Plan
NCI Freezer Division
St. Cloud, Minnesota**

Prepared For:

**NCI Freezer Division
St. Cloud, Minnesota**

Prepared By:

**PACE Laboratories, Inc.
Minneapolis, Minnesota**

Proposed Sampling Work Plan
WCI Freezer Division
St. Cloud, Minnesota

I. Empty Container Storage Area

Two soil borings will be drilled to a depth of 20 feet equidistant from the ends of the empty container storage area. Soil samples will be collected at 2 1/2 foot intervals using a split-spoon sampler. Samples will be screened utilizing a HNU Meter to detect organic contamination. Two samples from each borehole with the highest readings will be submitted to the laboratory for volatile organic compound (VOC) analysis (EPA SW 846 Method 8240). A discussion of the instrumentation and field screening procedure is provided in Section III below. Soil from samples having lower organic screening concentrations than the two highest readings will, upon request, be properly preserved and made available to the MPCA and/or the U.S. EPA for additional VOC analyses. Approximate sample locations are shown on Figure 1 (attached).

II. Closed Holding Pond

Near the closed holding pond, two soil borings will be drilled to a depth of 20 feet. Starting at the former base of the pond, soil samples will be collected at 2 1/2 foot intervals using a split-spoon sampler. Samples will be screened utilizing a HNU Meter to detect organic contamination. Two samples from each bore hole with the highest readings will be submitted to the laboratory for volatile organic compound analysis (EPA SW 846 Method 8240). In addition, all samples below the depth of the pond from each boring will be analyzed for RAS total metals. Soil from samples having lower organic screening concentrations than the two highest readings will, upon request, be properly preserved and made available to the MPCA and/or the U.S. EPA for additional VOC analyses. Approximate sample locations are shown on Figure 1.

One background soil boring will be drilled to a depth of 20 feet. The background soil boring location will be selected based on site conditions. Soil samples will be collected with a split-spoon sampler at 2 1/2 foot intervals. The boring at this location will be drilled in a manner so as to also allow construction of an upgradient monitoring well (discussed below). Five soil samples, including those corresponding to the same depths as at the closed holding pond, will be analyzed for RAS total metals. Soil from samples having lower organic screening concentrations than the two highest readings will, upon request, be properly preserved and made available to the MPCA and/or the U.S. EPA for additional VOC analyses. The approximate sample location is shown on Figure 1.

Downgradient of the closed holding pond, two monitoring wells will be installed. Upgradient of the closed holding pond, one monitoring well will be installed in conjunction with the background soil boring.

The monitoring wells will be installed in accordance with Minnesota Department of Health regulations. The wells will be installed to intersect the water table. The monitoring wells will be constructed with 2 inch stainless steel screens and risers. The screens will be 10 feet long with #10 slot size. A 4 inch diameter protective casing with a locking cap will be installed. Three protective posts will also be installed around each monitoring well.

Following well installation and development, ground water samples from each monitoring well will be collected utilizing a dedicated stainless steel bailer. Field blanks for volatile organic compounds will be collected at each location and a travel blank will be provided. Collected samples will be analyzed for volatile organic compounds and RAS dissolved metals.

III. HNU Screening

Soil samples collected for volatile organic compound screening will be placed in 500 ml glass amber containers, sealed with plastic wrap and covered with a Teflon™ lined cap. Each bottle will be half filled with sample. The soil container will be allowed to equilibrate in a warm location for 30 minutes. The sample will then be screened for the presence of volatile organic compounds using a HNU Model ISPI-101 trace gas analyzer supplied with a 10.2 eV lamp.

Selected portions of the HNU instruction manual are attached which describe the instrument, it's calibration and the relative photoionization sensitivities of various gases to the 10.2 eV lamp.

IV. Anticipated Project Schedule

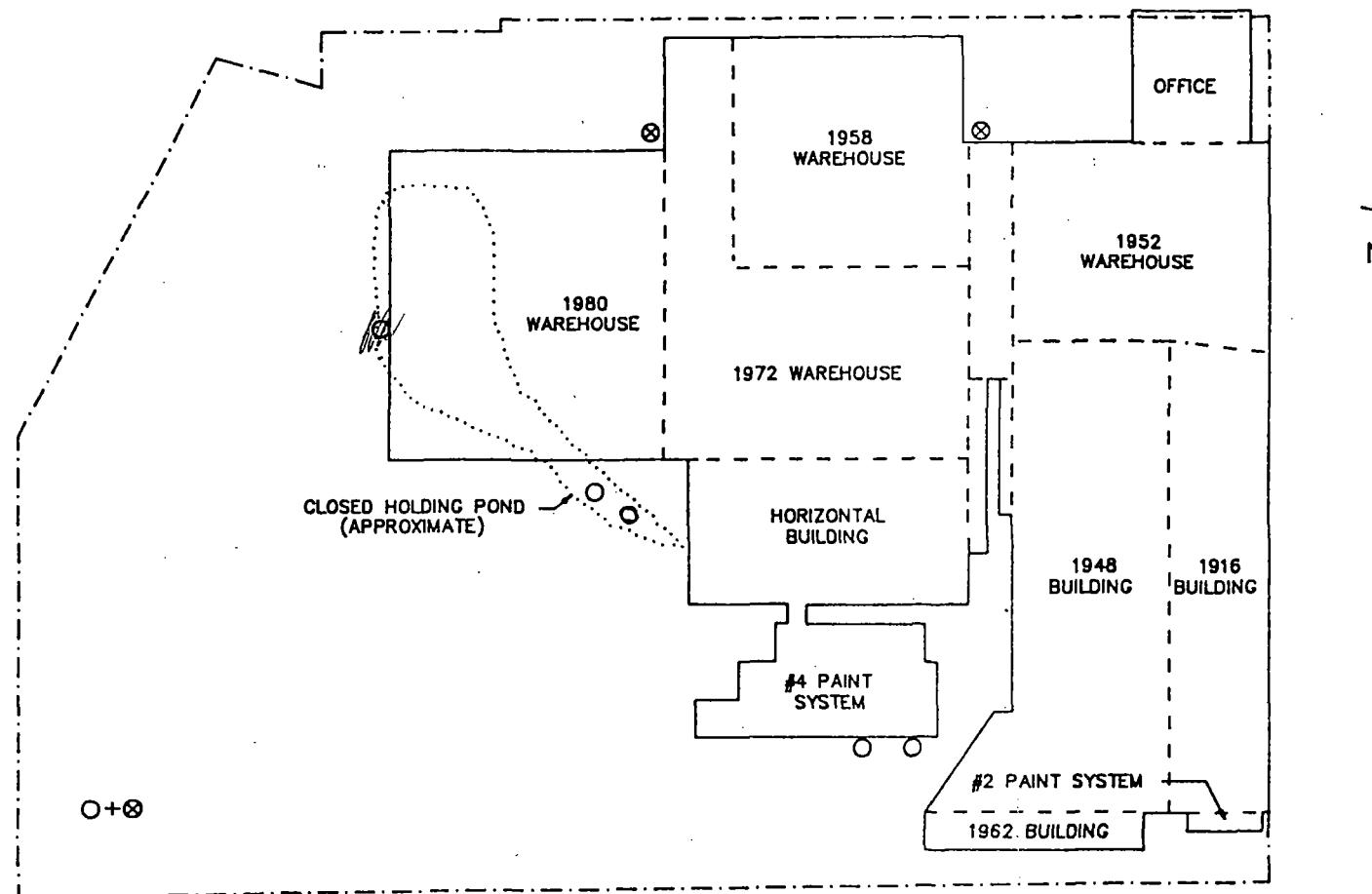
The following project schedule is proposed:

| <u>Task</u> | <u>Schedule</u> |
|-------------------------------------------------------------------|------------------------|
| Submit work plan to regulatory agencies for review and comment | Week of April 24, 1989 |
| Receive regulatory approvals | Week of May 15, 1989 |
| Commence field work | Week of June 5, 1989 |
| Complete field work | Week of June 19, 1989 |
| Provide final report | Week of July 3, 1989 |

FIGURE 1
WCI FREEZER DIVISION
SOIL BORING AND WELL LOCATIONS

PACE Laboratories, Inc.

April 21, 1989



○ PROPOSED SOIL BORING LOCATION
⊗ PROPOSED MONITORING WELL LOCATION

**INSTRUCTION MANUAL
TRACE GAS ANALYZER
HNU MODEL ISPI-101**

HNU Systems, Inc.
160 Charlemont Street
Newton, MA 02161-9987
(617)964-6690

January 1987

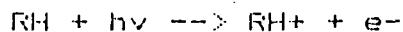
SECTION 1
GENERAL INFORMATION

1.1 INTRODUCTION

This manual describes the operation, maintenance and parts list for the Trace Gas Analyzer, Model ISPI 101, HNU Systems Inc.

1.2 EQUIPMENT DESCRIPTION

The Trace Gas Analyzer (see Figure 1-1), is a portable instrument used to detect, measure, and provide a direct reading of the concentration of a variety of trace gases in many industrial or plant atmospheres. The analyzer employs the principle of photoionization. This process involves the absorption of ultra-violet light (a photon) by a gas molecule leading to ionization:



in which

RH = Trace gas

$h\nu$ = Photon with an energy level equal to or greater than the ionization potential of RH.

The sensor consists of a sealed ultraviolet (UV) light source that emits photons with an energy level high enough to ionize many trace species, particularly organics, but not high enough to ionize the major components of air, O₂, N₂, CO, CO₂ or H₂O.

A chamber exposed to the light source contains a pair of electrodes: one a bias electrode and the second a collector electrode. When a positive potential is applied to the bias electrode a field is created in the chamber. Ions formed by the absorption of photons are driven to the collector electrode. The current produced is then measured, and the corresponding concentration is displayed on a meter directly in parts per million (ppm).

To minimize absorption or decomposition of sample gases, a rapid flow of sample gas is maintained through the ion chamber, which is small, made of inert material and located at the sampling point.

The analyzer consists of a probe, a readout assembly, and a battery charger. The probe contains the sensing and amplifying circuitry; the readout assembly contains the meter, controls, power supply and rechargeable battery. The analyzer will operate from the battery for approximately 6 hours.

Response for the Various Ultraviolet Lamps

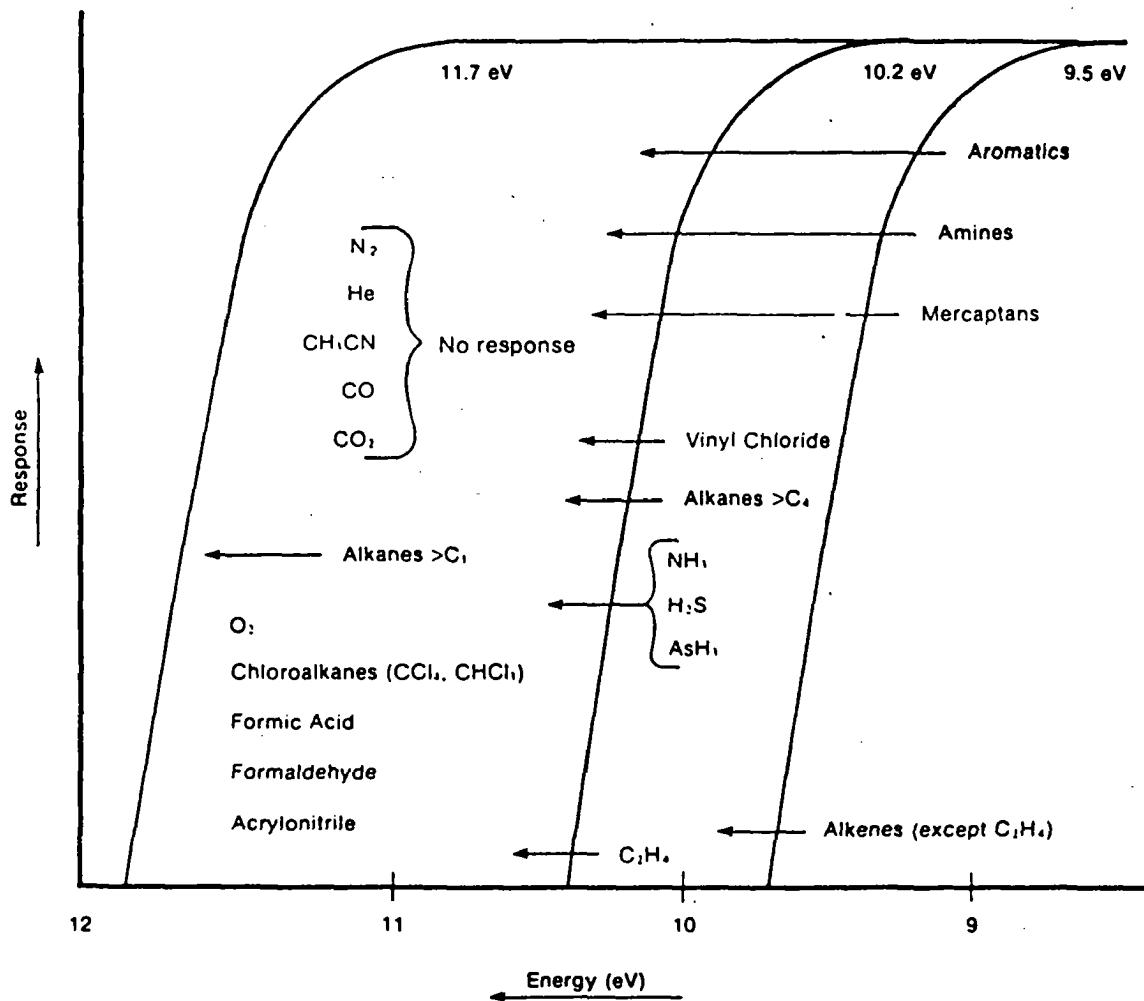


FIGURE 1-2
RESPONSE TO VARIOUS COMPOUNDS
FOR EACH ULTRAVIOLET LAMP

TABLE 1-1
SPECIFICATION DATA

DESIGN FEATURES

| | |
|----------------|---------------------------------------------------------------|
| Range settings | 0 to 20, 200, 2000 ppm (other ranges available on request) |
| Lamp rating | 10.2 eV standard, 9.5 or 11.7 eV optional |

CHARACTERISTICS (see NOTE)

| | |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Detection Range * | 0.1 to 2000 ppm (parts per million by volume) |
| Minimum Detection Level * | 0.1 ppm |
| Maximum Sensitivity * | 0 to 20 ppm FSD at SPAN = 9.8 (full scale deflection) 0 to 2 ppm FSD at SPAN = 0.0 |
| Repeatability * | +/- 1% of FSD |
| Linear Range * | 0.1 to 400 ppm |
| Useful Range * | 0.1 to 2000 ppm |
| Response Time | Less than 3 seconds to 90% of FSD |
| Ambient Humidity (10.2 and 9.5 eV lamps) | up to 90% RH (relative humidity) |
| Operating Temperature, Ambient (10.2 and 9.5 eV lamps) | -10 to 40 degrees C. 14 to 104°F |
| Operating Time on Battery, continuous use | Approximately 6 hours; at lower temperature, use time is reduced due to the effect of cold on the battery. |

TABLE 1-1 cont.

| | |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recharge time from full discharge | Full recharge: 12 to 14 hours. Unit can be left on the charger and be continuously recharged whenever the unit is not in use (the analyzer will not operate while the unit is on the charger: an Intrinsically Safe feature). |
| Recharge current | Max 0.4 amps at 15 V DC |
| Battery Charger Power | 120 V AC, single phase, 50-60 Hz 1.5 Amps 230 V AC, single phase, 50-60 Hz 0.75 Amps |

NOTE: * When equipped with 10.2 eV Probe with SPAN set at 9.8 and measuring benzene. Values will vary for other compounds and conditions.

SECTION 3.2, ANALYZED GAS CYLINDER cont.

One method of sampling the calibration gas is illustrated in Figure 3-1. Connect the cylinder to one leg of the tee, a flow meter to the opposite leg, and the probe to the third leg. The flow meter does not require a valve. If there is a valve, it must be left wide open. The flowmeter is only to indicate excess flow. Adjust the flow from the regulator such that only a little excess flow is registered at the flowmeter. This insures that the ISPI 101 sees the calibration gas at atmospheric pressure and ambient temperature. This calibration procedure applies only to calibration with a high pressure cylinder (with regulator).

A second method of calibration uses HNU Calibration Gas with the regulator at a preset flow (250 ml/min), and only a butt connection between the regulator and the probe extension is required (see Figure 3.2).

- d. Usage - Generally, a gas cylinder should not be used below 200-300 psi as pressure effects could cause concentration variations. The cylinder should not be used past the recommended age of the contents as indicated by the manufacturer. In case of difficulty, verify the contents and concentration of the gas cylinder.
- e. Safety - Isobutylene is nontoxic and safe to use in confined areas. There are no listed exposure levels at any concentration. For more details see Sections 3.5 and 3.2.
- f. Alternate means of calibration are possible. For more information, contact HNU Systems, Inc.

3.3 PROBE

- a. Identify the lamp by the probe label. If a question exists, disassemble the probe and inspect the lamp. The energy of the lamp is etched into the glass envelope. If the lamp appears to need cleaning, see Section 5.2, UV Lamp and Ion Chamber Cleaning.

CAUTION

The 11.7 eV lamp has NO special cleaning compound, unlike the 9.5 and the 10.2 eV lamps, which do. Do NOT use that compound with the 11.7 eV lamp; it will damage the crystal window and void the warranty. Do

SECTION 3.3, PROBE cont.

DO NOT use water or any other water soluble cleaning compound with the 11.7 eV lamp. Do not interchange ion chambers, amplifier boards or lamps between probes. (See Section 5.2 for lamp cleaning instructions).

- b. Connect the probe to the readout assembly.
- c. Set the SPAN pot to the proper value for the probe being calibrated. Refer to the calibration memo accompanying the probe.
- d. Check the Ionization Potential (IP) of the calibration gas to be used. The IP of the calibration gas must be at or below the IP of the lamp.
- e. Proceed with the calibration as described in Section 3.4. Check the calibration memo for specific data. If any questions develop, call an HNU representative.

3.4 PROCEDURE

- a. Battery check - With the probe attached, turn the function switch to BATT. The needle should be in the green region. If not, recharge the battery.
- b. Zero set - With the probe attached, turn the function switch to STANDBY. In this position the lamp is OFF and no signal is generated. Set the zero point with the ZERO set control. The zero can also be set with the function switch on the x1 position and using a "Hydrocarbon-free" air (check the gas manufacturer's specifications; some products contain some nitrogen carbide (NC)). In this case negative readings are possible if the analyzer measures a cleaner sample when in service.
- c. 0-20 or 0-200 range - For calibrating on the 0-20 or 0-200 range only one gas standard is required. Turn the function switch to the range position and note the meter reading. Adjust the SPAN control setting as required to read the ppm concentration of the standard. Recheck the zero setting (step b.). If readjustment is needed, repeat step c. This gives a two-point calibration; zero and the gas standard point. Additional calibration points can be generated by dilution of the standard with zero air if desired (see Section 8).
- d. 0-2000 range - For calibrating on the 0-2000 range, use of two standards is recommended as cited in Section 3.2a. First calibrate with the higher standard using the SPAN control for setting. Then calibrate with the lower standard using the ZERO adjustment. Repeat these several times to ensure that a good calibration

SECTION 3.4, PROCEDURE cont.

is obtained. The analyzer will be approximately linear to better than 600 ppm (see Figure 3-2). If the analyzer is to be used subsequently on the 0-20 or 0-200 range, it must be recalibrated as described in steps b. and c. above.

- e. Lamp cleaning - If the span setting resulting from calibration is 0.0 or if calibration cannot be achieved, then the lamp must be cleaned (see Section 5.2).
- f. Lamp replacement - If the lamp output is too low or if the lamp has failed, it must be replaced (see Section 5.3).

3.5 CALIBRATION CHECKING

Rapid calibration checking in the field can be accomplished by use of a small disposable cylinder containing isobutylene. Immediately after a calibration has been completed, a reading is taken on a special isobutylene standard. This provides a reference concentration measurement for later checking in the field. This can be done at any time with a portable cylinder containing this same special standard, using this reference reading as a check, and making adjustments to the analyzer if necessary. In effect, this is an indirect method of checking calibration, one maintaining the calibration to give direct readings for the original gas mixture, but using the portable isobutylene cylinder. Details are given in Section 3.2 of the Appendix.

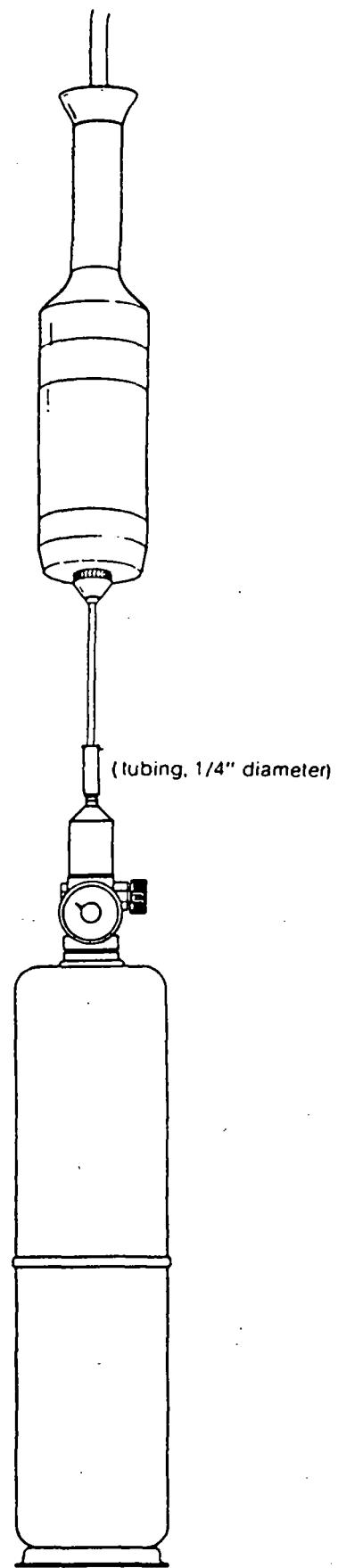


FIGURE 3-2
PRESET FLOW CALIBRATION SET UP

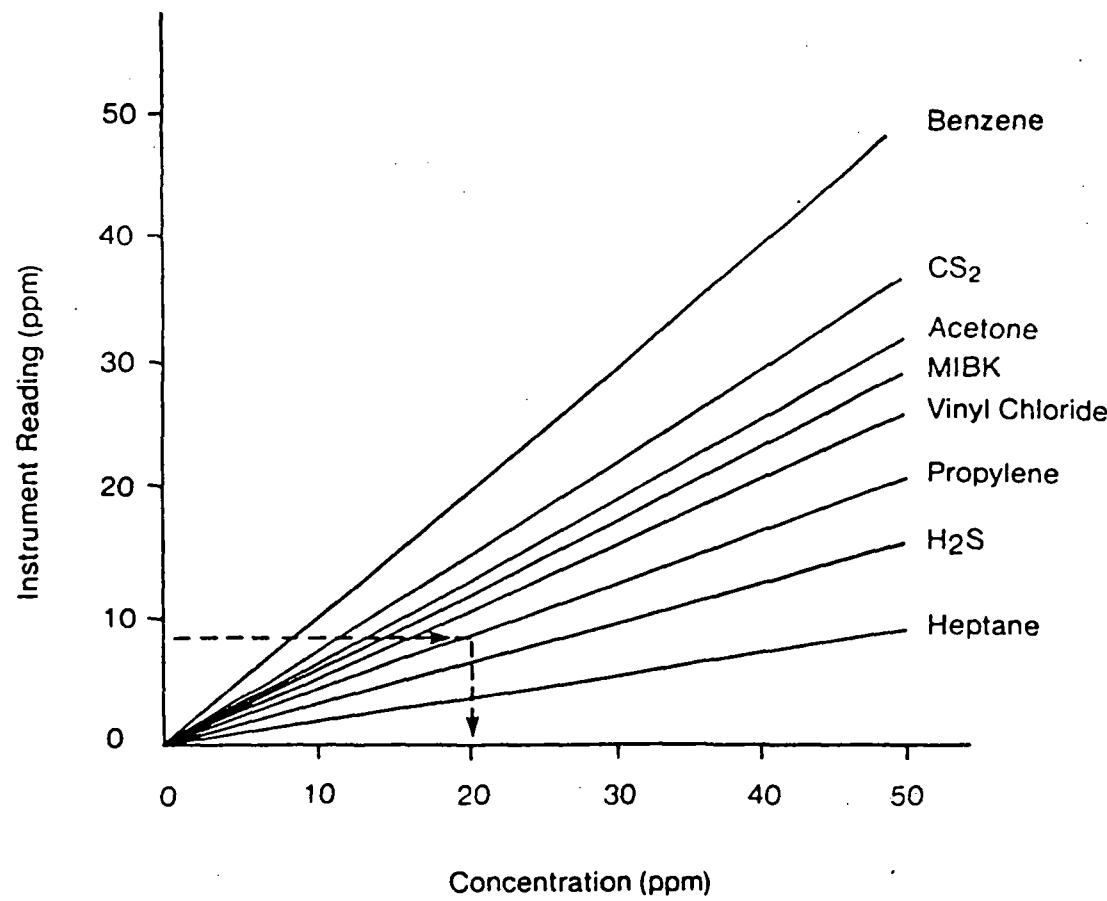


FIGURE 8-2
TYPICAL OUTPUT CURVES -
ANALYZER WITH 10.2 eV LAMP
CALIBRATED FOR BENZENE

TABLE 8-14

RELATIVE PHOTOIONIZATION SENSITIVITIES OF
VARIOUS GASES TO A 10.2 eV LAMP²

| Gas | Photoionization Sensitivity (see Note 1) | Span Control Setting for Direct reading (approximate) |
|------------------------|---------------------------------------------|-------------------------------------------------------------|
| p-xylene | 11.4 | |
| m-xylene | 11.2 | |
| benzene | 10.0 (reference standard) | 9.8 |
| toluene | 10.0 | |
| diethyl sulfide | 10.0 | |
| diethyl amine | 9.9 | |
| styrene | 9.7 | |
| trichloroethylene | 8.9 | 8.2 |
| carbon disulfide | 7.1 | |
| isobutylene | 5.5 5.5 | |
| acetone | 6.3 | |
| tetrahydrofuran | 6.0 | 5.5 |
| methyl ethyl ketone | 5.7 | |
| methyl isobutyl ketone | 5.7 | |
| cyclohexanone | 5.1 | |
| naptha (85% aromatics) | 5.0 | |
| vinyl chloride | 5.0 | 4.3 |
| methyl isocyanate | 4.5 | |
| iodine | 4.5 | |
| methyl mercaptan | 4.3 | |

TABLE 8-14 cont.

| | | |
|-------------------------------------|-----|-----|
| dimethyl sulfide | 4.3 | |
| allyl alcohol | 4.2 | |
| propylene | 4.0 | 3.5 |
| mineral spirits | 4.0 | |
| 2, 3-dichloropropene | 4.0 | |
| cyclohexene | 3.4 | |
| crotonaldehyde | 3.1 | |
| acrolein | 3.1 | |
| methyl methacrylate | 3.0 | 2.4 |
| pyridine | 3.0 | |
| hydrogen sulfide | 2.8 | |
| ethylene dibromide | 2.7 | 1.9 |
| n-octane | 2.5 | |
| acetaldehyde oxime | 2.3 | |
| hexane | 2.2 | |
| phosphine | 2.0 | |
| heptane | 1.7 | |
| allyl chloride (3-chloropropene) | 1.5 | |
| ethylene | 1.0 | |
| isopropanol | 1.0 | 0.1 |
| ethylene oxide | 1.0 | |
| acetic anhydride | 1.0 | |
| alpha pinene | 0.7 | |
| dibromochloropropane | 0.7 | |

TABLE 8-14 cont.

| | |
|------------------|------|
| epichlorohydrin | 0.7 |
| nitric oxide | 0.6 |
| beta pinene | 0.5 |
| citral | 0.5 |
| ammonia | 0.3 |
| acetic acid | 0.1 |
| nitrogen dioxide | 0.02 |
| methane | 0.0 |
| acetylene | 0.0 |

NOTE 1: PPM reading when measuring 10.0 ppm of particular gas with monitor calibrated for benzene.

N.D.SAMPLING - OBJECTIVE:

In October 1986 a Visual Site Inspection (VSI) was conducted at the WCI facility in St. Cloud as part of the RCRA Facility Assessment (RFA) of the site. The RFA report concluded that two solid waste management units merited further investigation to determine whether releases of hazardous constituents had contaminated soil or groundwater. These two areas are the empty container storage area south of the paint building and the former wastewater lagoon on the west side of the WCI property. Soil samples will be taken at both of these units and monitoring wells will be installed and groundwater samples taken near the former lagoon. One boring will be placed on an uncontaminated part of the site and used to determine background levels of toxic metals.

EMPTY CONTAINER STORAGE AREA:

Site Description: The empty drum storage area extends for about 70 feet outside and along the south wall of the paint system building. Empty 55-gallon drums are stored here prior to shipment back to the chemical supplier. The drums have been stored on their sides on the open ground with no container system. If there have been releases of drum residues the potential exists for soil and groundwater contamination.

Sampling locations: Two soil borings will be made equidistant from the ends of the storage area. The exact boring locations will be determined in the field.

Sampling Methods: Soil sampling will be done in accordance with ASTM: D 1586-84, using a 3 inch I.D. split spoon sampler driven into the soil with a 140 lb. weight falling 30 inches. Borings will be drilled to a depth of 20 feet. The soil shall be classified according to ASTM: D2488. Soil boring logs shall be completed which indicate the depth and classification of the soil strata, the N value of the soil, water level in the bore hole, the results of the head space analysis, and other relevant information regarding the boring or classification process. Samples shall be collected at 2 1/2 foot intervals with one portion placed in a container for laboratory possible analysis and another portion placed in a container for field evaluation by the headspace method.

Analysis Parameters: A field evaluation of soils will be done for volatile organics using the head space analysis. Samples of soils will be collected every 2 1/2 feet and approximately 100 grams of soil will be sealed in 12 ounce jars, sealed with Saran wrap or teflon, allowing adequate air space for collection of volatiles. The soil will be broken up and the sample placed in a warm location for several minutes. A field air-monitoring instrument such as an HNU or an OVA shall be used to detect the presence of volatile organics in each sample. Based on the results of the head space analysis, 5 samples from each boring shall be selected for laboratory analysis. The samples will undergo extraction and laboratory analysis for volatile organics in each sample. Based on the results of the head space analysis, 5 samples from each boring shall be selected for laboratory analysis. The samples will undergo extraction and laboratory analysis for volatile organic compounds (VOCs) according to EPA SW 846 methods.

Former Wastewater Lagoon:

Site Description: The unlined lagoon was on the west side of the WCI property and operated from 1965 to 1979. This lagoon received wastewaters from the #4 paint line and discharge from the Bonderite system. Until 1980 WCI used a lead/chromium based paint and the wastewaters would have contained these contaminants. Various solvents associated with the Bonderite and painting systems would have also been released to the wastewater lagoon. The lagoon bottoms showed contamination with chromium up to 18000 ppm and although some soil was removed it is not known what level of chromium or lead remained in the soil. Because the lagoon was unlined it is likely that the near surface groundwater was contaminated. A warehouse was built over the lagoon site in 1979.

Soil Borings: Four soil borings shall be made around the location of the former lagoon. Two of these borings shall be located on the south side and two shall be collected and analyzed according to the procedures described for the borings in the empty container area with the following exception: each of three of the borings shall also have five (5) samples analyzed for Routine Analytical Services (RAS) total metals. The five samples to be analyzed in each boring shall be selected (based on visual evaluation) from depths below the bottom of the former lagoon.

Monitoring Wells, Purposes and Location: Three groundwater monitoring wells shall be installed around the former lagoon. The purpose for the monitoring wells will be twofold. The wells are to function as detection monitoring wells, primarily to detect the presence of toxic metals, xylene, toluene and methyl ethyl ketone which are the main contaminants which may possibly exist at this site. As two of these suspected contaminants are less dense than water and since the wells will also serve to confirm the direction of the horizontal component of ground water flow, the wells will be installed to intersect the water table.

The attached map has the location of the proposed monitoring wells and also the four (4) borings which are to be installed as part of this investigation, see figure 1.

Groundwater Analysis Parameters: The groundwater samples shall be analyzed for VOCs and RAS total metals according to the procedures in EPA SW 846.

Groundwater Collection Procedures: The samples will be collected by MPCA personnel two weeks after well installation and development. Water table levels will be measured in each well prior to well sampling. Three well volumes of water will be purged from each well and the parameters of temperature, pH, and conductivity will be allowed to stabilize prior to sampling. Well purging and sample collection will be done with a stainless steel or Teflon bailer which is dedicated to that particular well. The bailers and sample containers will be provided and cleaned according to standard procedures by the Minnesota Department of Health and will meet the requirements of the Region V approved QAPP.

Monitoring Well Construction

The three monitoring wells are to be installed with hollow stem augers, with a minimum inside diameter (I.D.), 4.25 at least, preferably 6 1/4 inches. The wells will be constructed with 2.0 inch nominal diameter (N.D.) Type 304 stainless steel screens and riser pipes. The screens will have a number 10 slot and an appropriately sized filter pack extending two feet above the screen.

6 inches of very fine "flour sand" shall be placed above the filter pack. Above this two (2) feet of 100% sodium montmorillonite bentonite shall be placed, wetted, and allowed to hydrate 30 minutes before continuing the installation. (6) inches of very fine sand shall be placed above the bentonite seal and the remainder of the annulus shall be filled with a cement bentonite grout to within three (3) feet of the surface. From three (3) feet below grade to approximately six (6) inches above grade a concrete anchor shall be installed. Set into this concrete anchor shall be a four (4) inch diameter protective casing fitted with a locking cap. The top of the protective casing shall extend approximately one (1) inch above the vented cap of the monitoring well riser pipe. All monitoring well installations must be done in accordance with the Minnesota Dept. of Health's Water Well Construction Code (MN Rule 4735). This may involve the installation of protective posts around the monitoring wells unless other precautions such as weekly inspections are implemented. See figure 2 for a schematic of the well design criteria.

Background Soil Boring

One soil boring shall be taken to a 20 foot depth and sampled as described in the empty container section above. This boring shall be placed in a part of the facility which is presumably uncontaminated by releases of hazardous constituents and will indicate background levels of metals in the soils at the WCI facility. The final location will be selected in the field. Five samples shall be taken at depths which correspond to the depths sampled in the soil borings around the former lagoon and analysed for RAS total metals.

Field Control Samples:

An appropriate number of field blanks will be collected for water samples. One organic sample (specific location to be selected on site) will be collected to be used by the laboratory for a matrix spike and matrix spike duplicate.

Sample Containers:

The sample quantities, preservatives, bottle sizes and types to be used are those designated in the CLP SLOW for routine analytical services. The sample size, container type, preservation methods and holding times are also in Appendix B of the RFA QAPP. Contractor will provide all aforementioned sampling equipment. Sampling jars should be prepared using procedures listed in the Region V approved QAPP, Contractor will provide all aforementioned sampling equipment sampling equipment. Sampling jars should be prepared using procedures listed in the Region V approved QAPP, or if not specified: clean with nonphosphate detergent in tap water; 1:1 nitric acid rinse; 1:1 hydrochloric acid rinse; tap water rinse; and distilled water rinse.

Decontamination of Equipment:

A protocol for decontamination procedures tis to be established by the contractor and referenced or added as an attachment.

Recordkeeping:

The location from which each sample is taken will be recorded in the field logbook. Photographs will be used to document sampling sites and to verify written description entered in the field log, including static water depths borehole volumes, soil descriptions, and pertinent colors or odors. Field tracking records, sample analysis request sheets and chain of custody forms will be prepared as described in the RCRA QAPP. All photographs, forms, data, and other project documentation will be placed in the project file and will be submitted to Ms. Pat Vogtman.

Soil Sampling:

A drilling rig will be used to place soil borings and wells. The contractor will bring equipment to penetrate rock and asphalt pavement, in case it is necessary to collect samples from beneath paved areas. Provisions for taking angled borings shall also be made. Between borings, augers are to be decontaminated by procedures suggested in the Region V QAPP. All prospective sampling locations are to be first inspected, to ascertain that natural soil will be sampled. Samples are to be placed in appropriate containers, as mentioned previously and below, as soon as possible after their extraction, and the caps must be securely fastened. Lids are to be taped carefully, and permanent ink is to be used for labels, dates, and the collectors initials. Labeling is to be done at the time fo sample collection. Samples are to be packed and stored according to the approved Region V QAPP.

Chain of Custody:

Chain of custody procedures to be followed are outlined in section 7 of the RFA QAPP and in the CLP SOW. Procedures for field operations, shipping and receipt by the laboratory are also included therein.

Parameters for Analysis:

All samples will be analyzed according to the Routine Analytical Services (RAS) of the CLP SOW. The laboratory data will be validated according to section 14 and Appendix D of the RFA QAPP.

SAMPLING VISIT

Statement of Work

I. Introduction/Background

The Hazardous and Solid Waste Amendments of 1984 (HSWA) requires that releases from Solid Waste Management Units (SWMUs) be evaluated for all RCRA facilities seeking a permit. In addition, HSWA authorizes the evaluation of releases from interim status facilities. The evaluation of releases helps to establish the need for corrective action at RCRA facilities through a RCRA Facility Assessment (RFA). The RFA is composed of a Preliminary Review (PR), Visual Site Inspection (VSI), and where appropriate, a Sampling Visit (SV).

A. WCI Freezer (WCI), St. Cloud, MN: MND 092304856

It is intended to sample 2 on-site areas. These shall hereafter be referred to as the "Empty Drum Storage Area", and the "Former Wastewater Lagoon".

1. The Empty Drum Storage Area is a solid waste management unit situated along the south wall of the Paint Systems Building at WCI. Empty drums were stored over an unpaved area of soil. This open ground area may have become contaminated with hazardous constituents released from overturned 55 gallon containers or even through leaking, rusted containers that may have retained some residue after emptying. It is proposed to complete 2 soil borings down to a 20 foot depth (through the well sorted sandy soil with possible gravel layers) unless a geologically confining layer is encountered above that depth.

The sampling device shall be a split spoon sampler. Soil samples shall be taken continuously at 2 foot intervals in each boring. These shall later be analyzed for the RAS (organics) volatiles parameters using SW-846 methodology (lab extraction rather than headspace method). No more than 5 samples shall be sent for analysis from each boring.

2. The Former Wastewater Lagoon is another solid waste management unit located on the west side of WCI's property. Its overall dimensions were approximately 100' X 350' at time of closure. It was operated between 1965 to 1979. Waste bonderite, a "soapy" degreasing material, and chromium-containing washwater from paint spray booths was treated in the lagoon. It is proposed to complete 5 soil borings (including one background) down to 20 feet unless a confining layer is reached first. Four borings shall be drilled within the areal extent of the old lagoon. In the background boring and each of the 3 "sample" borings, no more than 5 soil samples shall be shipped and later analyzed for RAS (inorganics) metals. In each of the four sample wells, 5 soil samples shall be taken for the purposes of analyzing RAS (organics) volatiles.

Then, 3 monitoring wells shall be installed. One upgradient and two downgradient installations are proposed. It has been estimated that the total cost of well installation and materials shall be \$9,000. Each well shall be completed to a 15 to 30 foot depth below surface, and shall be equipped with a 5 foot screen to be placed at the water table. In the upgradient well and one downgradient well, a groundwater sample should be taken for the purposes of analyzing RAS (inorganics) metals. In all 3 wells, water samples should be taken for the purposes of analyzing RAS (organics) volatiles.

BRAUN
ENGINEERING TESTING

11

LIS PAUL 6800 S. County Rd. 18, P.O. Box 35108, Mpls., MN / 612-941-5600
R NESOTA 3219 E. 19th Avenue, Hibbing, MN 55746
L MINNESOTA 1520 - 24th Ave. N., P.O. Box 189, St. Cloud, MN 56301
/SUPERIOR 5431 Airpark Blvd., Duluth, MN 55811
RN MINNESOTA 40 - 16th St. S.E., Rochester, MN 55901

J.S. BRAUN P.E., President
P.H. ANDERSON, Vice Pres. Operations
C.G. KRUSE P.E., Vice Pres. Engineering
D.R. HAUSLER P.E., Associate

August 29, 1979

Franklin Manufacturing Company
701 33rd Avenue North
St. Cloud, Minnesota 56301

Attn: Mr. Wes Leedahl

Re: C79-111B ADDITIONAL SOILS
INVESTIGATION
Warehouse Addition to
Franklin Manufacturing
Company
33rd Avenue & 8th Street
North
St. Cloud, MN

Mr. Leedahl:

Per your request we have recently conducted an additional subsurface soils and groundwater investigation in the area of the proposed warehouse building addition. The purpose of this additional investigation was to obtain soil samples for chemical evaluation by Pace Laboratories, Inc.

Although this additional investigation was not conducted for evaluation of the soil conditions with regards to the foundation design of the building, this investigation was very helpful in further defining the limits of unsuitable soils in the addition area. This information will be used in conjunction with our previous soils investigations to aid in the excavation backfilling operations which are currently being conducted. Since the foundation design of the building is as previously discussed in our prior reports dated June 22 and July 12, 1979, we will not discuss the foundation requirements in greater detail. Please refer to these original reports for our recommendations concerning excavation and compaction requirements.

C79-111B

Franklin Manufacturing Co.

-2-

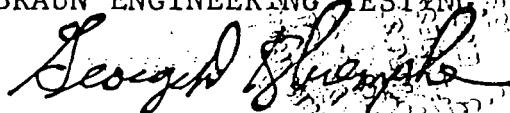
August 2

At this time we are providing periodic excavation & compaction testing services on the grading operations conducted. Bi-monthly reports regarding the status or conditions will be provided to you.

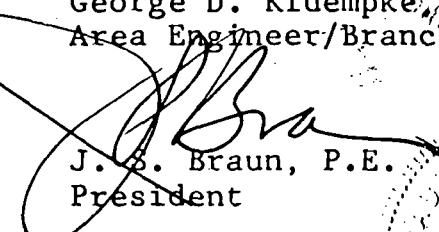
It has been our pleasure to be of service to you in providing this additional soils investigation. If we can be of further assistance, please contact us at your convenience.

Very truly yours,

BRAUN ENGINEERING TESTING, INC.



George D. Kluempke, P.E.
Area Engineer/Branch Manager

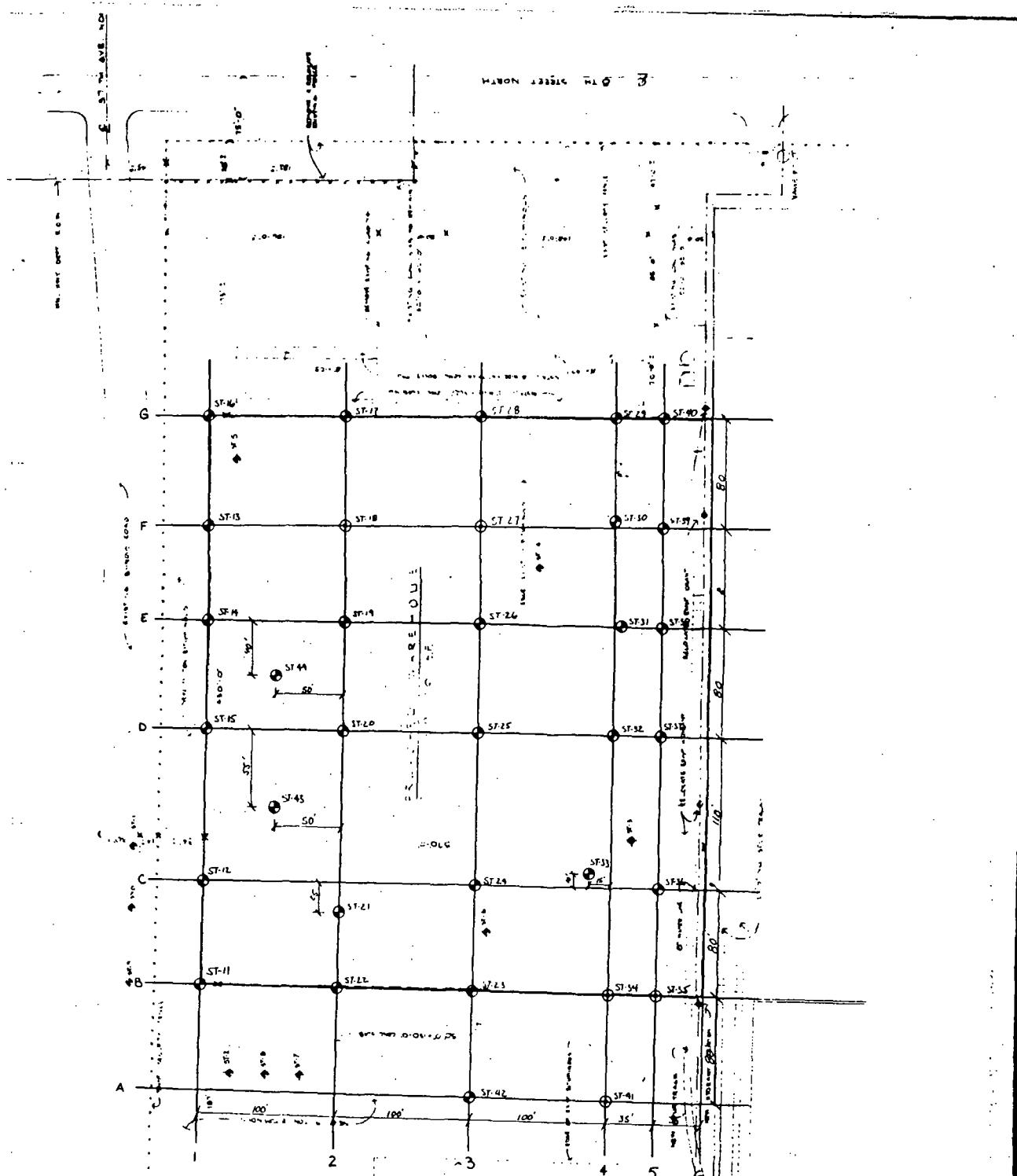


J. S. Braun, P.E.
President

GDK/JSB:jn

cc: Rice Building Systems
Attn: Mr. John Rice
Pace Laboratories, Inc.
Attn: Mr. Steve Vanderboom, P.E.
Braun Engineering Testing, Inc.
(Mpls.)





C79-111B Additional Soils Investigation
 Warehouse Addition to Franklin
 Manufacturing Co. 33rd Ave. & 8th St. No.
 St. Cloud, Minnesota

LOG OF BORING

BRAUN
ENGINEERING TESTING

| | |
|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| PROJECT: C79-111B ADDITIONAL FOUNDATION INVESTIGATION Warehouse Addition to Franklin Manufacturing St. Cloud, Minnesota | BORING: ST-11 LOCATION: See Attached Sketch |
|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|

| | | | | DATE: 8-21-79 | | SCALE: 1" = 4' | |
|----------------------------------|-------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------|----------------|--|
| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL | Tests or Notes | |
| 88.4 | 0 | PT & SP | PEAT, non to slightly fibrous, black, with a few seams of SAND, (SP), fine to medium-grained, wet to waterbearing, soft. (Swamp Deposit) | 3 | ▼ | | |
| 84.4 | 4 | PT | MUCK, grayish white to greenish white, wet, very soft. (Swamp Deposit) | WH/ WH | | | |
| 78.4 | 10 | SP | SAND, fine to medium-grained, with a trace of gravel, gray to light gray, waterbearing, loose to medium dense. (Coarse Alluvium) | 10 | WH/ WH | | |
| 72.9 | 15.5 | | Water level down 9.5' with 15' of hollow-stem auger in ground. Water level down 2.5' immediately after withdrawal of auger. | 15 | | 13 | |
| (See Report and Standard Plates) | | | | | | | |

LOG OF BORING



**PROJECT:C79-111B ADDITIONAL FOUNDATION
INVESTIGATION**
Warehouse Addition to Franklin
Manufacturing
St. Cloud, Minnesota

BORING: ST-12

LOCATION:

See Attached Sketch

DATE: 8-21-79

SCALE: 1" = 4'

| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL | Tests or Notes |
|-------|-------|-------------------|--------------------------------------------------------------------------------------------------------------------------------|-----|----|----------------|
| 88.5 | 0 | OL | SILTY SANDY CLAY, slightly organic, black, wet, very soft. (Swamp Deposit) | | | |
| 85.5 | 3 | PT | MUCK, greenish white, wet, very soft. (Swamp Deposit) | 17 | WH | |
| 83.5 | 5 | SP | SAND, fine to medium-grained, with a trace of gravel, gray, water-bearing, loose to medium dense. (Coarse Alluvium) | 1/3 | | |
| 78.0 | 10.5 | | Water level down 5' with 10' of hollow-stem auger in ground. Water level down 2' immediately after withdrawal of auger. | 7 | | 14 |

LOG OF BORING

BRAUN
ENGINEERING TESTING

| PROJECT:C79-111B ADDITIONAL FOUNDATION INVESTIGATION Warehouse Addition to Franklin Manufacturing St. Cloud, Minnesota | | | | | BORING: | ST-13 |
|------------------------------------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--|----------------|---------------------|
| | | | | | LOCATION: | See Attached Sketch |
| | | | DATE: 8-21-79 | | SCALE: 1" = 4' | |
| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | | BPF | WL |
| 88.3 | 0 | | Water | | | ▼ |
| 85.8 | 2.5 | | | | NH/3 | |
| 84.3 | 4 | SP-SM | SAND, SLIGHTLY SILTY, fine to medium-grained, gray, waterbearing,* | | | |
| | | SM-SC | SILTY CLAYEY SAND, fine to medium-grained, with a trace of gravel, gray, wet, rather stiff to stiff. (Till) | | 9 | |
| 77.8 | 10.5 | | | | 14 | |
| (See Report and Standard Plates for evaluation and descriptive terminology.) | | Water level at surface immediately after withdrawal of auger. | | | | |

LOG OF BORING



PROJECT:C79-111B ADDITIONAL FOUNDATION
INVESTIGATION
Warehouse Addition to Franklin
Manufacturing
St. Cloud, Minnesota

BORING: ST-14

LOCATION:

See Attached Sketch

DATE: 8-23-79

SCALE: 1" = 4'

| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL | Tests or Notes |
|-------|-------|-------------------|------------------------------------------------------------------------------------------------------|-----|----|----------------|
| 88.3 | 0 | | Water | | | |
| 86.3 | 2 | SP | SAND, fine to medium-grained, brown, waterbearing, loose. (Coarse Alluvium) | 8 | | |
| 83.8 | 4.5 | SP | SAND, medium to coarse-grained, dark gray to black, waterbearing, medium dense. (Coarse Alluvium) | 25 | | |
| 81.3 | 7 | SC | CLAYEY SAND, fine-grained, with a trace of gravel, grayish brown, moist, very stiff. (Till) | 22 | | |
| | | | | 17 | | |
| | | | | 21 | | |
| 72.8 | 15.5 | | Water level at surface immediately after withdrawal of auger. | 26 | | |

(See Report and Standard Plates for evaluation and descriptive terminology.)

LOG OF BORING

BRAUN
ENGINEERING TESTING

| PROJECT:C79-111B ADDITIONAL FOUNDATION INVESTIGATION Warehouse Addition to Franklin Manufacturing St. Cloud, Minnesota | | | | | BORING: ST-15 |
|---------------------------------------------------------------------------------------------------------------------------|------------|-------------------------|-----------------------------------------------------------------------------------------------------|---------------|-----------------------------------|
| | | | | | LOCATION:- See Attached Sketch |
| | | | | DATE: 8-23-79 | SCALE: 1" = 4' |
| Elev. N.A. | Depth 0 | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL ▼ |
| | 2 | PT | PEAT, brown, waterbearing. (Swamp Deposit) | | |
| | 9 | SP | SAND, fine to medium-grained, gray, waterbearing, loose to medium dense. (Coarse Alluvium) | 8 5 14 | |
| | 13 | SP | SAND, mostly medium-grained, gray, waterbearing, medium dense. (Coarse Alluvium) | 16 17 | |
| | 15.5 | SP | SAND, fine to medium-grained, gray, waterbearing, medium dense. (Coarse Alluvium) | 18 | |
| | | | Water level at surface immediately after withdrawal of auger. | | |

LOG OF BORING



**PROJECT:C79-111B ADDITIONAL FOUNDATION
INVESTIGATION**
Warehouse Addition to Franklin
Manufacturing
St. Cloud, Minnesota

BORING: ST-16

LOCATION:

See Attached Sketch

DATE: 8-22-79

SCALE: 1" = 4'

| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL | Tests or Notes |
|-------|-------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----------------|
| 92.6 | 0 | SM | SILTY SAND, fine-grained, with a trace of gravel, non to slightly organic, black to dark brown, dry to moist, loose. (Topsoil) | 9 | | |
| 88.1 | 4.5 | SP-SM | SAND, SLIGHTLY SILTY, fine to medium-grained, with a trace of gravel, grayish brown, moist to waterbearing at 7' depth, medium dense to loose. (Coarse Alluvium) | 16 | | |
| 80.6 | 12 | SP | SAND, fine to medium-grained, with a trace of gravel, gray, water-bearing, loose to very loose. (Coarse Alluvium) | 10 | | |
| 77.1 | 15.5 | | Water level down 10.9' with 15' of hollow-stem auger in ground. Water level not encountered to cave-in depth of 6.2' immediately after withdrawal of auger. | 4 | | |

LOG OF BORING

BRAUN
ENGINEERING TESTING

LOG OF BORING

BRAUM
ENGINEERING TESTING

| | | | | | |
|----------------------------------------------------------------------------------------------------------------------------|--|---------------|--|----------------|---------------------|
| PROJECT: C79-111B ADDITIONAL FOUNDATION INVESTIGATION Warehouse Addition to Franklin Manufacturing St. Cloud, Minnesota | | | | BORING: | ST-18 |
| | | | | LOCATION: | See Attached Sketch |
| | | DATE: 8-23-79 | | SCALE; 1" = 4' | |

(See Report and Standard Plates for evaluation and descriptive terminology.)

| Elev. N.A. | Depth 0 | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL | Tests or Notes |
|---------------|------------|-------------------------|------------------------------------------------------------------------------------------------------|------|----|----------------------------------------------------------------|
| | | | FILL, mostly SILTY SAND, (SM), fine to medium-grained, dark brown, with some concrete rubble, moist. | 9 | | NOTE: Four attempts were made to put down boring in this area. |
| | 4 | | Boring terminated upon refusal of auger. | 100+ | | |

LOG OF BORING

BRAUN
ENGINEERING TESTING

PROJECT:C79-111B ADDITIONAL FOUNDATION
INVESTIGATION
Warehouse Addition to Franklin
Manufacturing
St. Cloud, Minnesota

BORING: ST-19

LOCATION:

See Attached Sketch

DATE: 8-24-79

SCALE: 1" = 4'

| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPf | WL | Tests or Notes |
|-----------------------------------------------------|-------|-------------------------|---------------------------------------------------------------------------------------------------------|-----|----|----------------------|
| 87.6 | 0 | SM & SP | FILL, mostly SILTY SAND, (SM), mixed with PEAT (PT), moist. | | | |
| 85.6 | 2 | SC | CLAYEY SAND, fine-grained, with a trace of gravel, grayish brown, moist, stiff to hard. (Till) | 14 | | |
| | | | | 25 | | |
| | | | | 39 | ▼ | |
| | | | | 67 | | |
| | | | | 50 | | |
| 72.1 | 15.5 | | | 70 | | |
| Plates for evaluation and descriptive terminology.) | | | | | | |
| | | | Water level not encountered with 15' of hollow-stem auger in ground. | | | |
| | | | Water level down 8' immediately after withdrawal of auger. | | | |

LOG OF BORING

ENGINEERING TESTING

| PROJECT: C79-111B ADDITIONAL FOUNDATION INVESTIGATION Warehouse Addition to Franklin Manufacturing St. Cloud, Minnesota | | | | BORING: ST-20 | |
|--------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------|---------------------------------------------------------------------------------------------------------|-----------------------------------------|-----------------------|
| | | | | LOCATION: See Attached Sketch | |
| | | | | DATE: 8-24-79 | SCALE: 1" = 4' |
| Elev. N.A. | Depth 0 | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL |
| | 2 | SP | SAND, fine to medium-grained, brown, waterbearing, very loose. (Possible Fill) | 3 | |
| | | SC | CLAYEY SAND, fine-grained, with a trace of gravel, grayish brown, moist, stiff to hard. (Till) | 15 | |
| | | | | 13 | |
| | | | | 21 | |
| | | | | 25 | |
| | | | | 56 | |
| | 15.5 | | | 51 | |
| (See Report and Standard Plates for evaluation and descriptive terminology.) | | | Water level not encountered with 15' of hollow-stem auger in ground. | | |
| | | | Water level down 7' immediatley after withdrawal of auger. | | |

LOG OF BORING



| PROJECT:C79-111B ADDITIONAL FOUNDATION INVESTIGATION Warehouse Addition to Franklin Manufacturing St. Cloud, Minnesota | | | | | BORING: ST-21 LOCATION: See Attached Sketch | |
|---------------------------------------------------------------------------------------------------------------------------|-------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------|-------------------------------------|
| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL | Tests or Notes |
| 88.0 | 0 | | | | | |
| 86.0 | 2 | SM | SILTY SAND, fine to medium-grained, black, waterbearing. (Possible Fill) | 50/2* | | *Sampler encountered small boulder. |
| | | SP | SAND, medium to coarse-grained, with some gravel, black, waterbearing, medium dense. (Coarse Alluvium) | 23 | | |
| 81.0 | 7 | SC | CLAYEY SAND, fine-grained, with a trace of gravel, brown, very moist, hard. (Till) | 52 | | |
| 76.0 | 12 | | Boring terminated upon refusal of auger on what appeared to be a large boulder. Water level at surface immediately after withdrawal of auger. | 37 | | |

LOG OF BORING

BRAUM
ENGINEERING TESTING

PROJECT: C79-111B ADDITIONAL FOUNDATION
INVESTIGATION
Warehouse Addition to Franklin
Manufacturing
St. Cloud, Minnesota

BORING: ST-22

LOCATION:

See Attached Sketch

DATE: 8-23-79

SCALE: 1" = 4'

| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL | Tests or Notes |
|-----------------------------------------|-------|-------------------|--------------------------------------------------------------------------------------------------------------------------------|-----|----|------------------------------------|
| 89.3 | 0 | | | | | |
| 88.3 | 1 | SM | SILTY SAND, fine to medium-* | 4 | | *grained, black, wet. (Topsoil) |
| | | SM-SC | SILTY CLAYEY SAND, fine to medium-grained, with a trace of gravel, grayish brown. wet. loose. ** | | ▼ | ** (Coarse Alluvium) |
| 86.3 | 3 | SP | SAND, fine to medium-grained; with a little gravel, gray, water-bearing, loose to medium dense. (Coarse Alluvium) | 7 | | |
| | | | | 9 | | |
| | | | | 12 | | |
| 80.3 | 9 | SP | SAND, medium to fine-grained, with a little gravel, gray, water-bearing, medium dense. (Coarse Alluvium) | 16 | | |
| | | | | 15 | | |
| 73.8 | 15.5 | | Water level down 1' with 15' of hollow-stem auger in ground. Water level down 2' immediately after withdrawal of auger. | 27 | | |
| (See Report and Standard Plates) | | | | | | |

LOG OF BORING

BRAUN
ENGINEERING TESTING

| | | | | | |
|------------------------------------------------------------------------------------------------------------------------------------|--|--|--|-----------|-----------------------------|
| PROJECT:C79-111B ADDITIONAL FOUNDATION INVESTIGATION Warehouse Addition to Franklin Manufacturing St. Cloud, Minnesota | | | | BORING: | ST-23 |
| | | | | LOCATION: | See Attached Sketch |
| | | | | DATE: | 8-23-79 SCALE: 1" = 4' |

| (See Report and Standard Plates for evaluation and descriptive terminology.) | Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL | Tests or Notes |
|------------------------------------------------------------------------------|-------|-------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------|----|----------------|
| | 88.0 | 0 | | FILL, SILTY SAND (SM), fine to medium-grained, brown, with some vegetation, very loose. | WH/WH | | |
| | 86.0 | 2 | SM | SILTY SAND, fine to medium-grained with a trace of gravel, black to dark brown, waterbearing, medium dense. (Coarse Alluvium) | 11 | | |
| | 79.0 | 9 | SC | CLAYEY SAND, fine-grained, with a trace of gravel, grayish brown, wet, very stiff to hard. (Till) | 27 | | |
| | 72.5 | 15.5 | | Water level down 1' with 15' of hollow-stem auger in ground. Water level at surface immediately after withdrawal of auger. | 18 | | |
| | | | | | 28 | | |
| | | | | | 77 | | |
| | | | | | 31 | | |

LOG OF BORING

BRAUN
ENGINEERING TESTING

PROJECT:C79-111B ADDITIONAL FOUNDATION
INVESTIGATION
Warehouse Addition to Franklin
Manufacturing
St. Cloud, Minnesota

BORING: ST-24

LOCATION:

See Attached Sketch

DATE: 8-22-79

SCALE: 1" = 4'

| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL | Tests or Notes |
|-------|-------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----------------|
| 88.3 | 0 | SM | SILTY SAND, fine to medium-grained, with a trace of gravel, reddish brown, waterbearing, very loose to medium dense. (Coarse Alluvium) | 4 | | |
| 84.3 | 4 | SC | CLAYEY SAND, mostly fine-grained, with a trace of gravel, grayish brown, very moist, stiff to hard. (Till) | 23 | | |
| 72.8 | 15.5 | | Water level down 10' with 15' of hollow-stem auger in ground. Water level at surface immediately after withdrawal of auger. | 14 | | |
| | | | | 40 | | |
| | | | | 45 | | |
| | | | | 71 | | |
| | | | | 46 | | |

(See Report and Standard Plates for evaluation and descriptive terminology.)

LOG OF BORING

BRAUN
ENGINEERING TESTING

LOG OF BORING

DRW LTD
ENGINEERING TESTING

| PROJECT:C79-111B ADDITIONAL FOUNDATION INVESTIGATION Warehouse Addition to Franklin Manufacturing St. Cloud, Minnesota | | | | BORING: ST-26 | |
|------------------------------------------------------------------------------------------------------------------------|-------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|----------------|
| | | | | LOCATION: See Attached Sketch. | |
| | | | | DATE: 8-22-79 | SCALE: 1" = 4' |
| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL |
| 86.4 | 0 | | FILL, mostly SAND (SP), fine to medium-grained, brown, with a trace of rubble, moist. | | |
| 84.4 | 2 | SM-SC | SILTY CLAYEY SAND, fine-grained, with a trace of gravel, brown to grayish brown, very moist, very stiff. (Till) | 19 | |
| 79.4 | 7 | SC | CLAYEY SAND, fine-grained, with a trace of gravel, brownish gray, moist, hard to very stiff. (Till) | 37 | |
| 70.9 | 15.5 | | Water level not encountered with 15' of hollow-stem auger in ground. Water level not encountered to cave-in depth of 12' immediately after withdrawal of auger. | 30 | |
| | | | | 30 | |
| | | | | 27 | |

LOG OF BORING

BRAUN
ENGINEERING TESTING

PROJECT: C79-111B ADDITIONAL FOUNDATION
INVESTIGATION
Warehouse Addition to Franklin
Manufacturing
St. Cloud, Minnesota

BORING: ST-27

LOCATION:

See Attached Sketch

DATE: 8-23-79

SCALE: 1" = 4'

(See Report and Standard Plates for evaluation and descriptive terminology.)

| Elev. N.A. | Depth 0 | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL | Tests or Notes |
|---------------|------------|-------------------------|------------------------------------------------------------------------------------------------------------------|-----|-----|---------------------------------------------------------------------------------------|
| | | | FILL, mostly SILTY SAND (SM), fine-grained, brown, with some wood, concrete, brick and bituminous rubble, moist. | 100 | .9* | *Sampler encountered concrete rubble. |
| | 5 | | Boring terminated at 5' depth upon refusal of auger on concrete slab. | 100 | .4* | NOTE: Two attempts were made in this area to advance auger through fill. Both failed. |

LOG OF BORING

BRAUN
ENGINEERING TESTING

| PROJECT:C79-111B ADDITIONAL FOUNDATION INVESTIGATION Warehouse Addition to Franklin Manufacturing St. Cloud, Minnesota | | | | BORING: ST-28 |
|------------------------------------------------------------------------------------------------------------------------------------|-------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| | | | | LOCATION: See Attached Sketch |
| | | | | DATE: 8-24-79 SCALE: 1" = 4' |
| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | Tests or Notes |
| 95.0 | 0 | | | |
| 94.7 | .3 | | Bituminous Pavement | |
| | | SP & SP-SM | SAND, fine to medium-grained, with a trace of gravel, brown, with a few layers of SAND, SLIGHTLY SILTY (SP-SM), moist, medium dense. (Possible Fill) | 21 |
| 91.0 | 4 | SP | SAND, fine to medium-grained, with some gravel, brown, moist, very dense to medium dense. (Coarse Alluvium) | 76 |
| | | | | 11 |
| 86.0 | 9 | SP | SAND, fine to medium-grained, with a trace of gravel, brown, moist, medium dense. (Coarse Alluvium) | 11 |
| | | | | 14 |
| 82.0 | 13 | SP | SAND, fine to medium-grained, with a trace of gravel, brown to brownish gray, <u>waterbearing</u> , medium dense. (Coarse Alluvium) | 12 |
| 79.0 | 16 | SP-SM | SAND, SLIGHTLY SILTY, fine to medium-grained, with a little gravel, dark gray to gray, <u>water-</u> <u>bearing</u> , medium dense. (Coarse Alluvium) | 21 |
| | | | | 21 |
| | | | | 21 |
| 70.5 | 24.5 | SP | SAND, fine-grained, gray, <u>water-</u> <u>bearing</u> , loose to medium dense. (Coarse Alluvium) | 10 |
| | | | | 19 |
| 65.0 | 30 | | | |
| Continued on Sheet 2 | | | | |

(See Report and Standard Plates for evaluation and descriptive terminology.)

LOG OF BORING

BRAUH
ENGINEERING TESTING

| PROJECT:C79-111B ADDITIONAL FOUNDATION INVESTIGATION Warehouse Addition to Franklin Manufacturing St. Cloud, Minnesota | | | | | BORING: ST-28 continued LOCATION: | |
|------------------------------------------------------------------------------------------------------------------------------------|-------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------------------------------------|----------------|
| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL | Tests or Notes |
| 65.0 | 30 | SP | SAND, fine-grained, gray, water-bearing, medium dense to very dense. (Coarse Alluvium) | | | |
| 59.0 | 36 | SC | CLAYEY SAND, fine-grained, with a trace of gravel, grayish brown, moist, hard. (Till) | 100* | .5 | |
| 54.5 | 40.5 | | Water level down 20.6' with 40' of hollow-stem auger in ground. Water level not encountered to cave-in depth of 10.4' immediately after withdrawal of auger. Water level not encountered to cave-in depth of 10.6' when probing bore hole 5 hours later. Boring backfilled. | 100 | .4* | |

LOG OF BORING

BRAUN
ENGINEERING TESTING

PROJECT: C79-111B ADDITIONAL FOUNDATION
INVESTIGATION
Warehouse Addition to Franklin
Manufacturing
St. Cloud, Minnesota

BORING: ST-29

LOCATION:

See Attached Sketch

DATE: 8-22-79

SCALE: 1" = 4'

| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL | Tests or Notes |
|---------------------------|-------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|-------------------------------------|
| | | | | | | |
| 95.9 | 0 | | | | | |
| 95.6 | .3 | SP-SM & SP & SM | Bituminous Pavement SAND, SLIGHTLY SILTY, fine to medium-grained, with a trace of gravel, brown, with a few layers of SILTY SAND (SM) and SAND (SP), moist, medium dense to very dense. (Possible Fill) | 28 | | |
| 89.4 | 6.5 | SP | SAND, fine to medium-grained, with a trace of gravel, brown, moist, dense. (Coarse Alluvium) | 56 | | |
| 83.9 | 12 | SP | SAND, medium to fine-grained, with a little gravel, brown, water-bearing, medium dense. (Coarse Alluvium) | 31 | | |
| 77.9 | 18 | SP | | 36 | | |
| 75.4 | 20.5 | SM | SILTY SAND, fine-grained, with a trace of gravel, gray, water-bearing, loose. (Coarse Alluvium) | 90* | | *Sampler encountered small boulder. |
| | | | Water level down 13.8' with 20' of hollow-stem auger in ground. | 15 | | |
| | | | Water level not encountered to cave-in depth of 3' immediately after withdrawal of auger. | 26 | | |
| | | | Boring backfilled. | 5 | | |
| (See Report and Standard) | | | | | | |
| | | | | | | |

LOG OF BORING

BRAUN
ENGINEERING TESTING

| PROJECT: C79-111B ADDITIONAL FOUNDATION INVESTIGATION Warehouse Addition to Franklin Manufacturing St. Cloud, Minnesota | | | | BORING: ST-30 LOCATION: See Attached Sketch | |
|--------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|---------------------------------------------------|
| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL |
| 90.6 | 0 | | | | |
| 90.3 | .3 | | Bituminous Pavement | | |
| 87.6 | 3 | SP | FILL, mostly SILTY SAND (SM), fine-grained, with a trace of gravel, moist, medium dense. SAND, fine to medium-grained, with some gravel, brown, moist, dense. (Coarse Alluvium) | 11 | |
| 82.6 | 8 | SP | SAND, fine to medium-grained, with a trace of gravel, light brown, moist, medium dense. (Coarse Alluvium) | 42 | |
| 78.1 | 12.5 | SM | SILTY SAND, fine to medium-grained, with a little gravel, brown, * | 34 | |
| 76.6 | 14 | SP | SAND, fine-grained, grayish brown, waterbearing, loose to medium dense. (Coarse Alluvium) | 20 | |
| 70.1 | 20.5 | | Water level down 15.6' with 20' of hollow-stem auger in ground. Water level not encountered to cave-in depth of 4.9' immediately after withdrawal of auger. | 29 | |
| | | | | 8 | *waterbearing, medium dense. (Coarse Alluvium) |
| | | | | 7 | |
| | | | | 14 | |
| (See Report and Standard Plates for evaluation and descriptive terminology.) | | | | | |

LOG OF BORING

BRAUN
ENGINEERING TESTING

| PROJECT:C79-111B ADDITIONAL FOUNDATION INVESTIGATION Warehouse Addition to Franklin Manufacturing St. Cloud, Minnesota | | | | | BORING: | ST-36 |
|------------------------------------------------------------------------------------------------------------------------------------|-------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------|---------------------------------------------------|
| | | | | | LOCATION: | See Attached Sketch |
| | | | | | DATE: | 8-22-79 |
| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL | Tests or Notes |
| 94.9 | 0 | | Bituminous Pavement | | | |
| 94.6 | .3 | | FILL, mostly SILTY SAND (SM), fine to medium-grained, with a trace of gravel, brown, with traces of plastic and dried paint, moist, medium dense. | 19 | | |
| 88.9 | 6 | SP-SM | SAND, SLIGHTLY SILTY, fine to medium-grained, with a trace of gravel, brown, moist to * | 17 | | |
| 86.9 | 8 | SC | CLAYEY SAND, fine-grained, with a trace of gravel, grayish brown, moist, very stiff to hard. (Till) | 16 | ▼ | *waterbearing, medium dense. (Coarse Alluvium) |
| 74.5 | 20.5 | | Water level down 17.3' with 20' of hollow-stem auger in ground. Water level down 8.6' immediately after withdrawal of auger. | 31 | | |
| | | | | 38 | | |
| | | | | 31 | | |
| | | | | 101 | | |

LOG OF BORING

BRAUN
ENGINEERING TESTING

| PROJECT:C79-111B ADDITIONAL FOUNDATION INVESTIGATION Warehouse Addition to Franklin Manufacturing St. Cloud, Minnesota | | | | BORING: ST-37 LOCATION: See Attached Sketch |
|------------------------------------------------------------------------------------------------------------------------------|-------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| | | | | DATE: 8-24-79 SCALE: 1" = 4' |
| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | DATE: 8-24-79 SCALE: 1" = 4' |
| 95.1 | 0 | | Bituminous Pavement | |
| 94.8 | .3 | | FILL, mostly SILTY CLAYEY SAND (SM-SC) and SILTY SAND (SM), fine to medium-grained, dark brown, with a few traces of wood and metal rubble, medium dense to loose. | 25 |
| 86.6 | 8.5 | SC | CLAYEY SAND, fine-grained, with a trace of gravel, grayish brown, moist, very stiff to hard. (Till) | 8 12 22 34 46 79 89 |
| 74.6 | 20.5 | | Water level down 15.9' with 20' of hollow-stem auger in ground. Water level down 12.6' immediately after withdrawal of auger. Water level down 10.9' when probing bore hole $\frac{1}{4}$ hour later. Boring backfilled. | |

LOG OF BORING

BRAUN
ENGINEERING TESTING

PROJECT:C79-111B ADDITIONAL FOUNDATION
INVESTIGATION
Warehouse Addition to Franklin
Manufacturing
St. Cloud, Minnesota

BORING: ST-31

LOCATION:

See Attached Sketch

DATE:

SCALE: 1" = 4'

(See Report and Standard Plates for evaluation and descriptive terminology.)

| Elev. N.A. | Depth 0 | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL | Tests or Notes |
|---------------|------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----|-------------------------------------|
| | | | FILL, mostly SILTY SAND, fine to medium-grained, with a trace of gravel, brown, with a few layers of SAND (SP), with some metal, concrete and bituminous rubble, loose to medium dense. | 7 | | |
| | 9 | | | 8 | | |
| | 11.5 | ML | SANDY SILT, brown, wet, very stiff. (Fine Alluvium) | 18 | | |
| | 14 | ML | SANDY SILT, gray, moist. (Fine Alluvium) | 28 | | |
| | 20.5 | SC | CLAYEY SAND, fine-grained, with a trace of gravel, gray, moist, very stiff to hard. (Till) | 100/3* | | *Sampler encountered small boulder. |
| | | | Water level not encountered with 20' of hollow-stem auger in ground. | 30 | | |
| | | | Water level not encountered to cave-in depth of 14.2' immediately after withdrawal of auger. | 60 | | |
| | | | | 61 | | |

LOG OF BORING

DRILLING
ENGINEERING TESTING

| PROJECT: C79-111B ADDITIONAL FOUNDATION INVESTIGATION Warehouse Addition to Franklin Manufacturing St. Cloud, Minnesota | | | | BORING: ST-32 LOCATION: See Attached Sketch | |
|--------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------------------|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------|-------------------------------------|
| | | | | DATE: 8-22-79 SCALE: 1" = 4' | |
| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL |
| 87.8 | 0 | SP-SM | SAND, SLIGHTLY SILTY, fine to medium-grained, brown, water-bearing, loose. (Coarse Alluvium) | 5 | |
| 85.8 | 2 | SP | SAND, fine-grained, brown, * | 16 | |
| 85.3 | 2.5 | SC | CLAYEY SAND, fine-grained, brown, moist, very stiff to hard. (Till) | 21 | *waterbearing. (Coarse Alluvium) |
| | | | | 50 | |
| | | | | 45 | |
| | | | | 53 | |
| | | | | 58 | |
| (See Report and Standard Plates for evaluation and descriptive terminology.) | 15.5 | | Water level not encountered with 15' of hollow-stem auger in ground. | | |
| | | | Water level not encountered to cave-in depth of 12' immediately after withdrawal of auger. | | |

LOG OF BORING

BRAUN
ENGINEERING TESTING

**PROJECT:C79-111B ADDITIONAL FOUNDATION
INVESTIGATION
Warehouse Addition to Franklin
Manufacturing
St. Cloud, Minnesota**

BORING: ST-33

LOCATION:

See Attached Sketch

DATE: 8-22-79

SCALE: 1" = 4'

| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL | Tests | or | Notes |
|-------------------------------------------------------------------------------|-------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|--------------------------------|----|-------|
| | | | | | | | | |
| 89.2 | 0 | SC | CLAYEY SAND, fine-grained, brown, very moist, rather soft. (Possible Fill) | 4 | | | | |
| 87.2 | 2 | SM-SC | SILTY CLAYEY SAND, brown, wet, medium dense. (Till) | 15 | | | | |
| 85.2 | 4 | SC | CLAYEY SAND, fine-grained, with a trace of gravel, grayish brown to gray, very moist, very stiff to hard. (Till) | 21 | | | | |
| | | | | 33 | | | | |
| | | | | 44 | | | | |
| 73.7 | 15.5 | | Water level not encountered with 15' of hollow-stem auger in ground. Water level not encountered to cave-in depth of 12' immediately after withdrawal of auger. | 100 | * | *Sampler encountered boulders. | | |
| (See Report and Standard Plates for evaluation and descriptive terminology.) | | | | | | | | |

LOG OF BORING

BRAUN
ENGINEERING TESTING

PROJECT:C79-111B ADDITIONAL FOUNDATION
INVESTIGATION
Warehouse Addition to Franklin
Manufacturing
St. Cloud, Minnesota

BORING: ST-38

LOCATION:

See Attached Sketch

DATE: 8-24-79

SCALE: 1" = 4'

| Elev. N.A. | Depth 0 | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL | Tests or Notes |
|------------------------------------------------------------------------------|------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----------------------|
| | .3 | | Bituminous Pavement | | | |
| | | | FILL, mostly SILTY SAND (SM), fine to medium-grained, with a trace of gravel, brown mixed with dark brown, with a few traces of brick and wood rubble, moist, medium dense to loose. | 27 | | |
| | | | | 9 | | |
| | | | | 19 | | |
| | | | | 7 | | |
| | 11.5 | | | | | |
| | 11.5 | CL & CH | SILTY CLAY, gray, with a few seams of FAT CLAY (CH), dark gray, wet, medium. (Fine Alluvium) | 7 | | |
| | 14 | SC | CLAYEY SAND, fine-grained, with a trace of gravel, gray, moist, very stiff to hard. (Till) | 23 | | |
| | 14 | | | 58 | | |
| | 20.5 | | | 87 | | |
| (See Report and Standard Plates for evaluation and descriptive terminology.) | | | Water level down 16.6' with 20' of hollow-stem auger in ground. | | | |
| | | | Water level down 14' immediately after withdrawal of auger. | | | |
| | | | Water level down 12.4' when probing bore hole 2 hours later. | | | |
| | | | Boring backfilled. | | | |
| | | | | | | |

LOG OF BORING

BRAUN
ENGINEERING TESTING

| PROJECT:C79-111B ADDITIONAL FOUNDATION INVESTIGATION Warehouse Addition to Franklin Manufacturing St. Cloud, Minnesota | | | | | BORING: | ST-39 |
|------------------------------------------------------------------------------------------------------------------------|-------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------|---------------------|
| | | | | | LOCATION: | See Attached Sketch |
| | | | | | DATE: | 8-23-79 |
| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL | Tests or Notes |
| 95.4 | 0 | | | | | |
| 95.1 | .3 | SP | SAND, fine to medium-grained, with some gravel, brown, moist, dense to very dense. (Possible Fill) | 33 | | |
| | | | | 76 | | |
| 88.4 | 7 | SP | SAND, fine to medium-grained, with a little gravel, brown, moist to waterbearing at 13' depth, medium dense. (Coarse Alluvium) | 16 | | |
| | | | | 16 | | |
| 91.9 | 13.5 | ML | SANDY SILT, grayish brown, wet, medium. (Fine Alluvium) | 28 | | |
| 79.4 | 16 | SM | SILTY SAND, fine-grained, grayish brown, waterbearing, very loose to loose. (Coarse Alluvium) | 7 | ▼ | |
| | | | | 4 | | |
| 74.9 | 20.5 | | Water level down 15.4' with 20' of hollow-stem auger in ground. Water level not encountered to cave-in depth of 5.4' immediately after withdrawal of auger. Boring backfilled. | 5 | | |

LOG OF BORING

BRAUN
ENGINEERING TESTING

PROJECT:C79-111B ADDITIONAL FOUNDATION
INVESTIGATION
Warehouse Addition to Franklin
Manufacturing
St. Cloud, Minnesota

BORING: ST-40

LOCATION:

See Attached Sketch

DATE: 8-23-79

SCALE: 1" = 4'

| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL | Tests or Notes |
|----------------------------------------------------|-------|-------------------|-------------------------------------------------------------------------------------------------------|-----|----|--------------------------------------------------------|
| 95.6 | 0 | | | | | |
| 95.3 | .3 | | Bituminous Pavement | | | |
| 94.1 | 1.5 | SM | SILTY SAND, fine to medium-grained,* | | | *with a little gravel, reddish brown, moist. (Fill) |
| | | SP | SAND, fine to medium-grained, with some gravel, brown, moist, dense to very dense. (Possible Fill) | 34 | | |
| | | | | 69 | | |
| | | | | 51 | | |
| | | | | 60 | | |
| | | | | 51 | | |
| 82.1 | 13.5 | SW | SAND, well graded, with a little gravel, brown, waterbearing, medium dense. (Coarse Alluvium) | 16 | | |
| | | | | 15 | | |
| 76.6 | 19 | | | | | |
| 75.1 | 20.5 | SP | SAND, fine-grained, gray, water-bearing, medium dense. ** | 15 | | ** (Coarse Alluvium) |
| | | | Water level down 15.1' with 20' of hollow-stem auger in ground. | | | |
| | | | Water level not encountered to cave-in depth of 9.8' immediately after withdrawal of auger. | | | |
| | | | Water level not encountered to cave-in depth of 8.7' when probing bore hole $\frac{1}{4}$ hour later. | | | |
| | | | Boring backfilled. | | | |
| Plates for evaluation and descriptive terminology. | | | | | | |
| | | | | | | |
| Report and Standard Plates | | | | | | |
| | | | | | | |
| (See Report and Standard Plates) | | | | | | |
| | | | | | | |

LOG OF BORING

BRAUN
ENGINEERING TESTING

| | | | | | |
|------------------------------------------------------------------------------------------------------------------------------------|--|--|--|---------------|---------------------|
| PROJECT:C79-111B ADDITIONAL FOUNDATION INVESTIGATION Warehouse Addition to Franklin Manufacturing St. Cloud, Minnesota | | | | BORING: | ST-42 |
| | | | | LOCATION: | See Attached Sketch |
| | | | | DATE: 8-24-79 | SCALE: 1" = 4' |

(See Report and Standard Plates for evaluation and descriptive terminology.)

| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL | Tests or Notes |
|-------|-------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|----------------|
| 88.4 | 0 | | | | | |
| 87.4 | 1 | SP | FILL, SAND, fine to medium-grained, with some gravel, brown, moist. * | 5 | | *loose. |
| | | SC | CLAYEY SAND, fine-grained, with a trace of gravel, grayish brown, moist, very stiff to hard. (Till) | 21 | | |
| | | | | 32 | | |
| | | | | 52 | | |
| | | | | 50 | | |
| | | | | 50 | | |
| | | | | 50 | | |
| 72.9 | 15.5 | | Water level not encountered with 15' of hollow-stem auger in ground. Water level not encountered to cave-in depth of 12' immediately after withdrawal of auger. | | | |

LOG OF BORING

BRAUN
ENGINEERING TESTING

| | | | | | |
|---------------------------------------------------------------------------------------------------------------------------|--|--|--|-----------|-----------------------------|
| PROJECT:C79-111B ADDITIONAL FOUNDATION INVESTIGATION Warehouse Addition to Franklin Manufacturing St. Cloud, Minnesota | | | | BORING: | ST-43 |
| | | | | LOCATION: | See Attached Sketch |
| | | | | DATE: | 8-27-79 SCALE: 1" = 4' |

| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL | Tests or Notes |
|-------|-------|-------------------|----------------------------------------------------------------------------------------------------------------------------|-----|----|------------------------------------------------|
| 87.4 | 0 | | | | | |
| 86.4 | 1 | PT & SM | PEAT, mixed with SILTY SAND, * | 2 | | *black, waterbearing, soft. (Swamp Deposit) |
| | | SP | SAND, fine to medium-grained, with a trace of gravel, gray, water-bearing, medium dense. (Coarse Alluvium) | 13 | | |
| | | | | 16 | | |
| 80.4 | 7 | SP | SAND, medium to fine-grained, with a little gravel, brown, water-bearing, medium dense to very dense. (Coarse Alluvium) | 23 | | |
| | | | | 99 | | |
| 75.4 | 12 | SC | CLAYEY SAND, fine-grained, with a trace of gravel, brownish gray, moist, hard. (Till) | 35 | | |
| 71.9 | 15.5 | | Water level at surface immediately after withdrawal of auger. | 44 | | |

(See Report and Standard Plates for evaluation and descriptive terminology.)

LOG OF BORING

BRAUN
ENGINEERING TESTING

| | | | | |
|----------------------------------------------------------------------------------------------------------------------------|--|--|--|-----------------------------------|
| PROJECT: C79-111B ADDITIONAL FOUNDATION INVESTIGATION Warehouse Addition to Franklin Manufacturing St. Cloud, Minnesota | | | | BORING: ST-44 |
| | | | | LOCATION: See Attached Sketch |
| | | | | DATE: 8-27-79 SCALE: 1" = 4' |

(See Report and Standard Plates for evaluation and descriptive terminology.)

| Elev. | Depth | ASTM D2487 Symbol | Description of Materials (ASTM: D2488) | BPF | WL | Tests or Notes |
|-------|-------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|------------------------------------------------|
| 87.2 | 0 | | | | | |
| 86.7 | .5 | PT&SM | PEAT mixed with SILTY SAND. * | | 2 | *black, waterbearing, soft. (Possible Fill) |
| 85.2 | 2 | SM | SILTY SAND, fine to medium-grained, brown, waterbearing. ** | | | ** (Coarse Alluvium) |
| | | SC | CLAYEY SAND, fine-grained, with a trace of gravel, brown, moist, rather stiff to hard. (Till) | | 9 | |
| | | | | | 11 | |
| | | | | | 35 | |
| | | | | | 34 | |
| | | | | | 37 | |
| | | | | | | ▼ |
| 71.7 | 15.5 | | Water level down 14' with 15' of hollow-stem auger in ground. Water level not encountered to cave-in depth of 13' immediately after withdrawal of auger. | | 34 | |

DESCRIPTIVE TERMINOLOGY

PARTICLE SIZE IDENTIFICATION

| | |
|-----------|-------------------|
| Boulders | over 3" |
| Gravel | |
| Coarse | 1" - 3" |
| Medium | 1/2" - 1" |
| Fine | No. 4 - 1/2" |
| Sand | |
| Coarse | No. 4 - No. 10 |
| Medium | No. 10 - No. 40 |
| Fine | No. 40 - No. 100 |
| Very Fine | No. 100 - No. 200 |
| Silt | No. 200 - .005 mm |
| Clay | less than .005 mm |

SOIL INTRUSIONS

| THICKNESS | |
|-----------|----------------------------------------------------------------|
| lense | 0 - 1/8" |
| seam | 1/8" - 1" |
| layer | 1" - 12" |
| varved | alternating seams or lenses of clays and silts in lake deposit |

| RELATIVE PROPORTIONS | |
|----------------------|----------|
| with a few | 0 - 10% |
| with some | 11 - 20% |
| with | over 20% |

MOISTURE CONTENT

| | |
|--------------|------------------------|
| Dry | less than 5% |
| Moist | under optimum moisture |
| Wet | over optimum moisture |
| Waterbearing | saturated sand |

ORGANIC CONTENT

| | |
|----------|-------------------------|
| 0 - 5% | non to slightly organic |
| 6 - 10% | slightly organic |
| 11 - 25% | organic |
| 26 - 65% | muck |
| 65+ | peat |

RELATIVE DENSITY OF COHESIONLESS SOILS

| | |
|--------------|-------------|
| very loose | 0 - 4 BPF |
| loose | 5 - 10 BPF |
| medium dense | 11 - 30 BPF |
| dense | 31 - 50 BPF |
| very dense | 50+ BPF |

CONSISTENCY OF COHESIVE SOILS

| | |
|--------------|-------------|
| very soft | 0 - 1 BPF |
| soft | 2 - 3 BPF |
| rather soft | 4 - 5 BPF |
| medium | 6 - 8 BPF |
| rather stiff | 9 - 12 BPF |
| stiff | 13 - 16 BPF |
| very stiff | 17 - 30 BPF |
| hard | 30+ BPF |

PLASTICITY OF SOILS WITH LESS THAN 20% CLAY

| | |
|------------------|-----------------------|
| non plastic | gritty, cannot thread |
| slightly plastic | rough to smooth, |
| plastic | hard to thread |
| | smooth to waxy, |
| | easy to thread |

RELATIVE PROPORTIONS OF GRAVEL

| | |
|----------|----------|
| a trace | 0 - 5% |
| a little | 6 - 15% |
| some | 16 - 30% |
| and | 31 - 50% |

LABORATORY TESTS

| | | | |
|----|-----------------------------|----|---------------------------------|
| DD | Dry Density, pcf | OC | Organic Content, % |
| WD | Wet Density, pcf | S | Percent of Saturation, % |
| MC | Natural Moisture Content, % | SG | Specific Gravity |
| LL | Liquid Limit, % | C | Cohesion |
| PL | Plastic Limit, % | O | Angle of Internal Friction |
| PI | Plasticity Index, % | cu | Unconfined Compressive Strength |

DRILLING NOTES:

Standard penetration test borings were advanced by 2 1/4" or 3 1/4" I.D. hollow-stem augers unless noted otherwise. Jetting water was used to clean out auger prior to sampling only where indicated on logs. Standard penetration test borings are designated by the prefix "ST" (Split Tube). Power auger borings were advanced by 4" or 6" diameter, continuous-flite, solid stem augers. Soil classification and strata depths are inferred from disturbed samples augered to the surface and are therefore somewhat approximate. Power auger borings are designated by the prefix "B". Hand probings were advanced manually with a 1 1/2" diameter probe and are limited to the depth from which the probe can be manually withdrawn. Hand probings are indicated by the prefix "H".

CLASSIFICATION:

Classification on logs is made by inspection in accordance with the Unified Soils Classification System (see attached chart) using visual-manual procedures unless noted otherwise.

GROUND WATER:

Observations were made at the times indicated. Porosity of soil strata, seasonal weather conditions, site topography, etc., may cause changes in the water levels indicated on the logs.

SAMPLING:

All samples are taken with the standard 2" O. D. split-tube sampler, except where noted. TW indicates thin-wall undisturbed sample.

BPF:

Numbers indicate blows per foot recorded in standard penetration test, also known as "N" value. The sampler is set 6" into undisturbed soil below the hollow-stem auger. Driving resistances are then counted for second and third 6" increments and added to get BPF. Where they differ significantly, they are reported in the following form - 2/12 for the second and third 6" increments respectively.

WH:

WH indicates that sampler penetrated soil under weight of hammer and rods alone, driving not required.

NOTE:

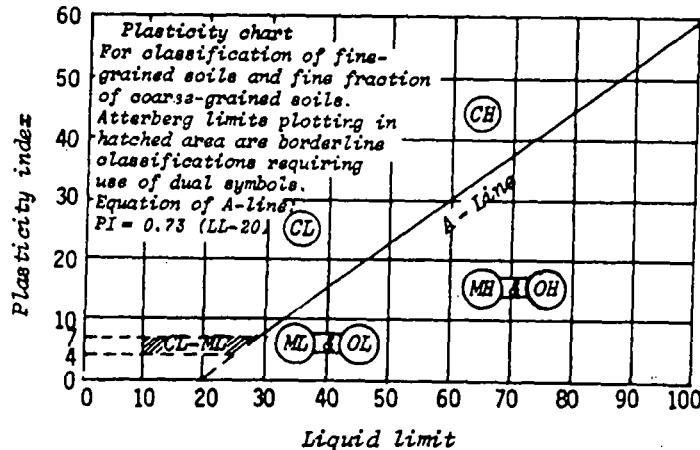
All tests run in accordance with applicable ASTM standards.



CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES

ASTM DESIGNATION D-2487

| Major Divisions | Group Symbols | Typical Names | Classification Criteria |
|-----------------------------------------------------------------|--------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Coarse-Grained Soils More than 50% retained on No. 200 sieve | Gravels 50% or more of coarse fraction retained on No. 4 sieve. | GW Well-graded gravels and gravel-sand mixtures, little or no fines | $C_u = D_{60}/D_{10}$ Greater than 4 |
| | | GP Poorly graded gravels and gravel-sand mixtures, little or no fines | $C_u = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3 |
| | | GM Silty gravels, gravel-sand-silt mixtures | Not meeting both criteria for GW |
| | | GC Clayey gravels, gravel-sand-clay mixtures | Atterberg limits plot below "A" line or plasticity index less than 4 |
| | | SW Well-graded sands and gravelly sands, little or no fines | Atterberg limits plot above "A" line and plasticity index greater than 7 |
| | Sands More than 50% of coarse fraction passes No. 4 sieve | SP Poorly graded sands and gravelly sands, little or no fines | Greater than 6 |
| | | SM Silty sands, sand-silt mixtures | $C_u = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ Between 1 and 3 |
| | | SC Clayey sands, sand-clay mixtures | Not meeting both criteria for SW |
| | | ML Inorganic silts, rock flour, silty or clayey fine sand | Atterberg limits plot below "A" line or plasticity index less than 4 |
| | | CL Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays | Atterberg limits plot above "A" line and plasticity index greater than 7 |
| Fine-Grained Soils 50% or more passes No. 200 sieve | Silts and Clays Liquid limit 50% or less | OL Organic silts and organic silty clays of low plasticity | Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols |
| | | ML Inorganic silts, micaceous or diatomaceous silts, elastic silts | Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols |
| | | CH Inorganic clays of high plasticity, fat clays | Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols |
| | | OH Organic clays of medium to high plasticity | Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols |
| | | Pt Peat, muck and other highly organic soils | Visual-manual identification |
| | | | |
| | | | |



Classification on basis of percentage of fines

Less than 5% Pass No. 200 sieve--GW, GP, SH, SP
More than 12% Pass No. 200 sieve--GM, GC, SM, SC
5% to 12% Pass No. 200 sieve----Borderline classification
requiring use of dual symbols